CCD-TR303E/TR303EP

RMT-507

SERVICE MANUAL

AEP Model
UK Model
Australian Model
CCD-TR303E
E Model
CCD-TR303E/TR303EP

Video8
Handycam
A MECHANISM

10x
SONY
Video8
Handycam
AE

Remote commander is available as a unit. But as individual parts the battery case lid of commander is only avaiable.

CCD-TR303EP is a model that soft carrying case is added in CCD-TR303E.
CCD-TR303EP and CCD-TR303E have different packing material, etc.

For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL IV" (9-973-199-11).

SPECIFICATIONS

System

Video recording system	Two rotary heads, Helical scanning FM system
Audio recording system	Two rotary heads, Helical scanning FM system
Video signal	PAL colour, CCIR standards
Usable cassette	8 mm video format cassette
Tape speed	SP mode: Approx. 20.051 mm (13/16 inch)/s LP mode: Approx. 10.058 mm (13/32 inch)/s
Recording time	SP mode: 1 h and 30 min (P5-90) LP mode: 3 h (P5-90)
Playback time	SP mode: 1 h and 30 min (E5/P5-90) LP mode: 3 h (P5-90)
Fast-forward/rewind time	Approx. 8.5 min (E5/P5-90)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (black and white)
Lens	Combined 10 × power zoom lens f = 6.2 to 62 mm (1/4 to 2 1/2 inches) F 1.6 to F 2.9 (45 to 450 mm (1 13/16 to 17 5/8 inches) when converted to a 35-mm still camera) Filter diameter 37 mm (1 1/2 inches)
Autofocus sytem	TTL autofocus system inner focus wide macro system
Colour temperature	Automatic
Minimum illumination	1 lx (F 1.6)
Illumination range	1 lx to 100,000 lx (0.2 to 9,290 footcandles)
Recommended illumination	More than 100 lx (9.3 footcandles)

Output connector

Video output	Phono jack, 1 Vp-p, 75 Ω unbalanced sync negative
Audio output	Phono jack −7.5 dBs (at impedance 47 kΩ) impedance less than 2.2 kΩ
RFU DC OUT	Special minijack, DC 5 V
ⅽ Remote jack	Stereo mini-minijack (ø2.5 mm)
MIC jack	Minijack, −66 dBs, low impedance with 2.5−3 V DC output, impedance 6.8 kΩ

— Continued on next page —

8 VIDEO CAMERA RECORDER

SONY®

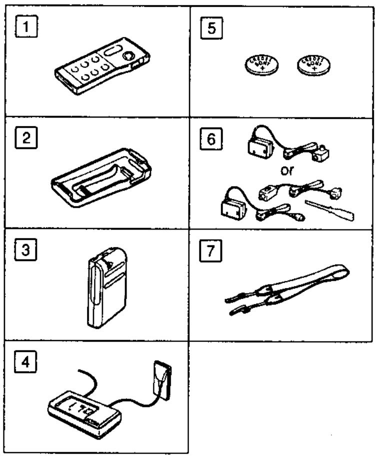
MICROFILM

General

Power requirements	
	On battery mounting surface 6.0 V (battery pack) 7.5 V (AC power adaptor) 9.0 V (alkaline batteries)
Average power consumption	
	5.3 W (camera recording) including the viewfinder
Installation	Vertically, Horizontally
Operating temperature	
	0 °C to 40 °C (32 °F to 104 °F)
Storage temperature	
	−20 °C to +60 °C (−4 °F to +140 °F)
Dimensions	Approx. 109 × 109 × 178 mm (w/h/d) (4 3/8 × 4 3/8 × 7 1/8 inches)
Weight	Approx. 770 g (1 lb 11 oz) excluding the battery pack, lithium battery, cassette, and shoulder strap Approx. 1,000 g (2 lb 3 oz) including the battery pack NP-55, lithium battery CR2025, cassette P5-90, and shoulder strap
Microphone	Electret condenser microphone, manaural type

Supplied accessories

(A)



(A)

- 1 Wireless Remote Commander (1)
- 2 Remote Commander holder (1)
- 3 Battery pack NP-55 (1)
- 4 AC power adaptor AC-V35 (1)
- 5 Lithium battery CR2025 (2) (for camcorder/for the Remote Commander)
- 6 RFU adaptor
  - RFU-90E (1) (AEP model)
  - RFU-90AS (1) (Australian model)
  - RFU-89EA with an aerial selector and a screw driver (1) (UK/E model)
- 7 Shoulder strap (1)

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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There is the color reproduction standard frame at the back of the book.

SERVICE NOTE

[SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

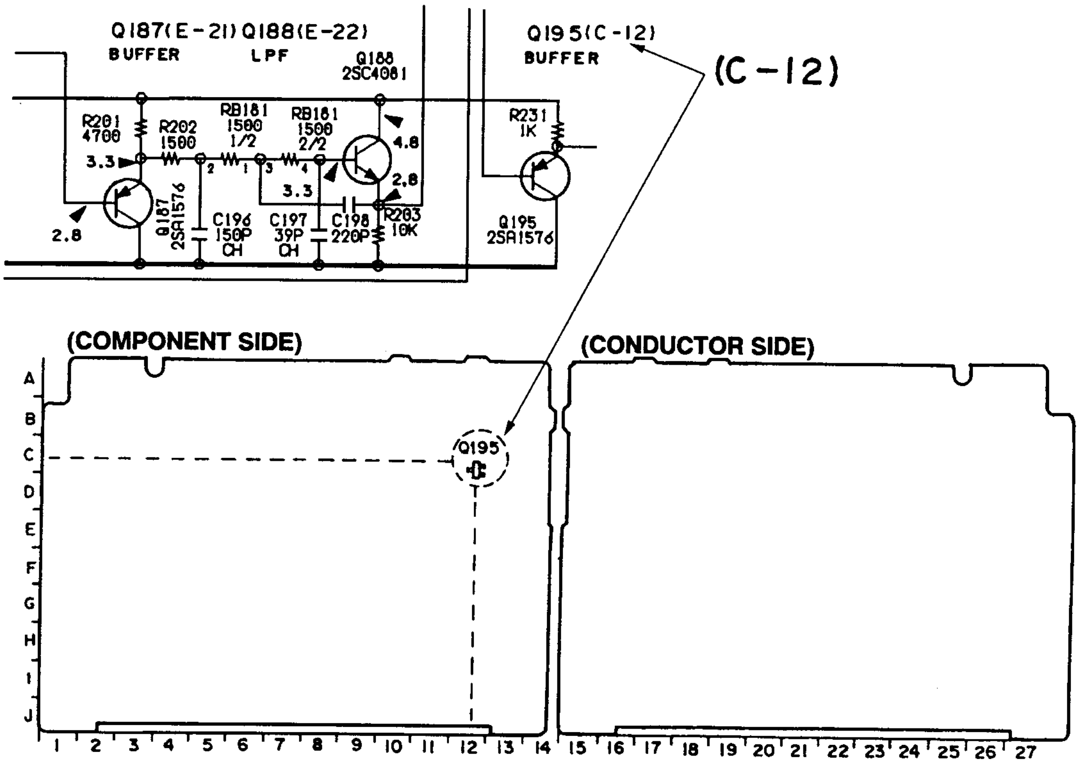
Part code and part name of the semiconductor for correction of the print board is discribed in the space of each print figure. Use this list when ordering parts.

[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See pages 95 and 107.)
This diagram is useful for repair.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red as shown below. This enables to find the location on the board easily when servicing.



Q187(E-21) Q188(E-22)
BUFFER
LPF
Q188
2SC4081
Q195(C-12)
BUFFER
(C-12)
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
3.3
4.8
2.8
3.3
2.8
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
R231
1K
Q195
2SA1576
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
A
B
C
D
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H
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[HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [✪] mark is flashing in the viewfinder at this time, head clogs are occurred.

Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

Remedy

[Cleaning method using a cleaning tape]

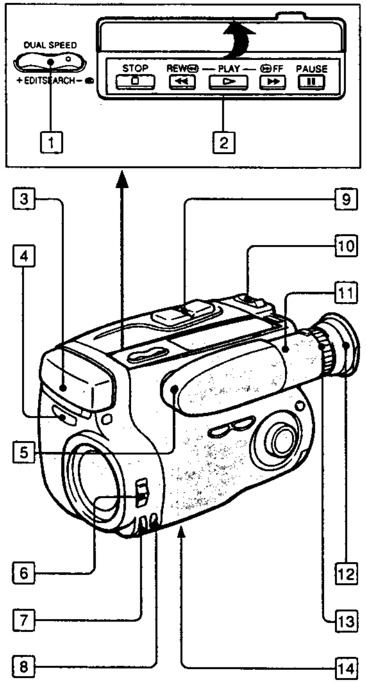
- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

SECTION 1
GENERAL

This section is extracted from instruction manual of AEP/UK model.

Identifying the Parts

(B-1)



For details on the use of each part, refer to the pages indicated in the parentheses.

(B-1)

1 **EDITSEARCH button** (26)

2 **Tape transport buttons** (37), (38)
- ☐ STOP (stop)
- ◀◀ REW (rewind)
- ▷ PLAY (playback)
- ▶▶ FF (fast forward)
- ❙❙ PAUSE (pause)

3 **Built-in microphone** (monaural)

4 **Remote sensor** (7)

5 **Camera recording/battery lamp** (24)

6 **LENS COVER switch** (23)

7 **Focus dial** (27)

8 **FOCUS button** (27)

9 **Power zoom button** (25), (27)

10 **POWER switch**

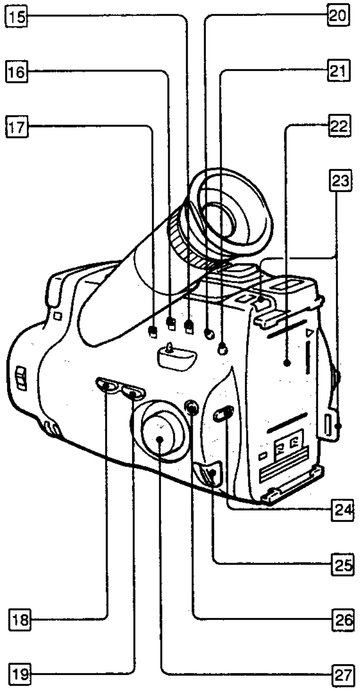
11 **Viewfinder** (22)

12 **Eyecup**

13 **Viewfinder lens adjustment ring** (22)

14 **Lithium battery compartment** (9)

(B-2)



Identifying the Parts

(B-2)

15 **REC MODE (recording mode)/EDIT switch** (23), (39)

Mode	Recording	Playback	Editing
Setting	REC MODE SP LP	EDIT	EDIT
Function	Recording mode switch	EDIT switch	

16 **REMOTE COMMANDER ▣ ON/OFF switch** (7)

17 **BEEP switch** (22)

18 **DATE (+) button** (19), (24), (31)

19 **TIME (NEXT) button** (19), (24), (31)

20 **SUMMERTIME button** (19), (31)

21 **AREA button** (31)

22 **Battery mounting surface** (12)

23 **Hooks for shoulder strap**

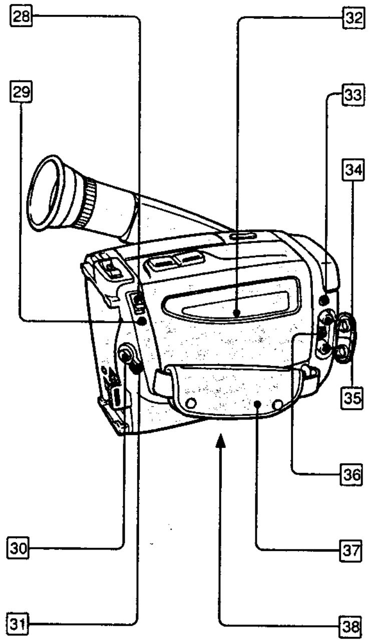
24 **COUNTER RESET button** (23)

25 **BATT (battery eject) knob** (12)

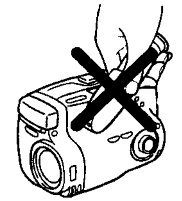
26 **FADER button** (30)

27 **PROGRAM AE dial** (28)

(B-3)



(B-4)



(B-3)

28 **EJECT knob (21)**

29 **⏻* remote control jack (stereo mini-minijack)**

30 **START/STOP button (23)**

31 **STANDBY switch (19), (23)**

32 **Cassette compartment (21)**

33 **MIC (microphone) jack (PLUG IN POWER) (monaural minijack)**
Connect an external microphone (not supplied).

34 **Jack cover**

35 **Video/Audio output jack (phono jacks) (36), (39)**

36 **RFU DC OUT (DC output) jack (34), (35)**

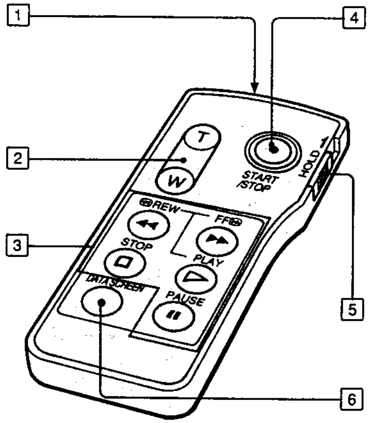
37 **Grip strap**

38 **Tripod receptacle**

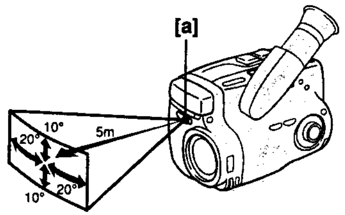
* **About ⏻ (LANC)**
⏻ (LANC) stands for Local Application Control Bus System. The ⏻ (LANC) connector is used for controlling the tape transport of video equipment and the peripherals connected to it.
This connector has the same function as the connectors indicated as CONTROL L or REMOTE.

Caution (B-4)
Do not pick up the camcorder as shown in the illustration.

(B-5)



(B-6)



Wireless Remote Commander

You can remotely record or play back a tape. The buttons on the Remote Commander with the same name or same mark as those on the camcorder have the same function.

When you use the Remote Commander
Be sure to insert the supplied lithium battery into it (page 10) and to set REMOTE COMMANDER 18 ON/OFF on the camcorder to "ON".

(B-5)

1 **Transmitter**

2 **Power zoom button (25), (27)**

3 **Tape transport buttons (37), (38)**

4 **START/STOP button**

5 **HOLD switch***
Slide in the direction of the arrow to prevent the buttons from being accidentally depressed.

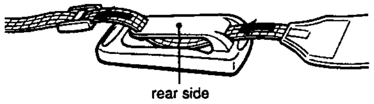
6 **DATA SCREEN button* (38)**
Press to erase or display the on-screen display.

Note
The * indicates the function which is operable only with the Remote Commander.

Remotely controllable area (B-6)
Point the Remote Commander towards the remote sensor **[a]**.

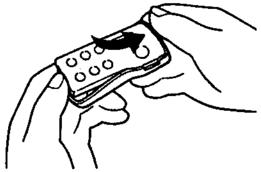
Notes on the Remote Commander
- **Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise the remote control may not be effective.**
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works through the signals of commander mode "VTR 2". A commander mode is used to distinguish this camcorder from other Sony VTR to avoid misoperation. If you use another Sony VTR at commander mode "VTR 2", we recommend you change the commander mode or cover the remote sensor of the VTR with black paper.

(B-7)

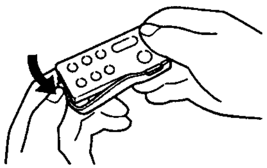


(B-8)

[a]



[b]

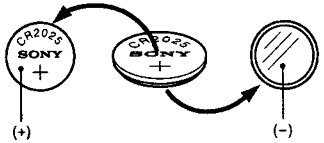


Using the Remote Commander holder
You can clip the Remote Commander holder on your coat pocket or belt, or also slide it onto the shoulder belt before attaching the Remote Commander to it. **(B-7)**

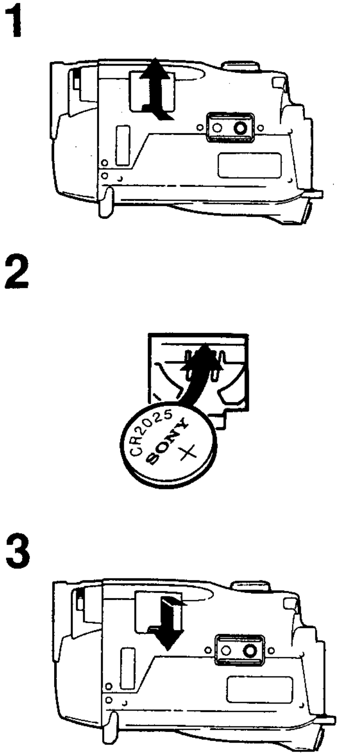
(B-8)

- [a] When attaching the Remote Commander to the Remote Commander holder
- [b] When detaching the Remote Commander from the Remote Commander holder

(C-1)



(C-2)



Preparing your camcorder 1

Inserting the Lithium Batteries

Your camcorder is supplied with two lithium batteries. One is for the camcorder, and the other is for the Remote Commander. Note that the lithium battery has a positive (+) side and a negative (−; no mark) side as illustrated. **Be sure to install the lithium battery with the correct polarity. (C-1)**

Inserting the Lithium Battery into the Camcorder

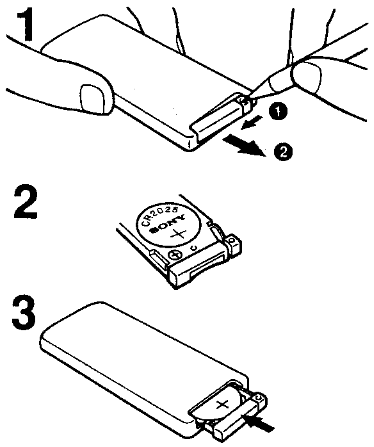
(C-2)

This camcorder uses a lithium battery to activate the clock. At first install the supplied lithium battery.

1. **Detach the lid of the lithium battery compartment at the bottom.**
2. **Install the supplied CR2025 lithium battery with the positive (+) side facing out.**
3. **Replace the lid.**

To change the lithium battery
Detach the lid of the lithium battery compartment, and replace the lithium battery with a new one.
When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, resetting of the date and time will be necessary.

(C-3)



Inserting the Lithium Batteries

Inserting the Lithium Battery into the Remote Commander

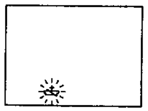
(C-3)

1 **Pull out the lithium battery holder from the Commander.**

2 **Install the lithium battery with the positive (+) side facing upward.**

3 **Put the lithium battery holder back into the Commander.**

(C-4)



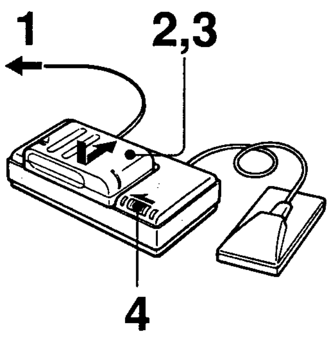
Lithium battery life (under normal operation)

(C-4)

The battery for the camcorder lasts for approximately 1 year.
When the battery becomes weak, the 🔋 indicator will flash inside the viewfinder for about 5 seconds (when the POWER switch is set to CAMERA).
The battery for the Remote Commander lasts for approximately 6 months. When the battery becomes weak or dead, the Commander does not work.
In either case, replace the battery with a Sony CR2025 battery. Use of any other type of battery may present the risk of fire or explosion.

CAUTIONS
- Keep the lithium battery out of the reach of children.
  Should the battery be swallowed, immediately consult a doctor.
- Do not hold the battery with the metallic tweezers, otherwise a short-circuit may occur.
- The battery may explode if mistreated.
  Do not recharge, disassemble, or dispose of in fire.

(D-1)



Preparing your camcorder 2

Connecting the Power Sources

First, Choose the Power Source.

Place	Power source	Accessory to be used
Outdoors	Battery pack	Battery pack NP-55 (supplied), NP-55H, NP-66H, NP-77, NP-77H, NP-77HD
	Alkaline batteries	Battery case EBP-77
Indoors	House current	AC power adaptor AC-V35 (supplied), AC-V55, AC-S10
In the car	12V or 24V car battery	DC pack DCP-77, AC power adaptor AC-V55, the car battery cord DCC-16AE and the car battery charger DC-S10

For details, see the operation manual of the accessory you want to use.

Using the Battery Pack

Step 1

Charge the battery pack. (D-1)

1 **Connect the AC power adaptor to a wall outlet.**

2 **Align the right side of the battery pack with the line on the AC power adaptor.**

3 **Slide in the battery pack to the right.**

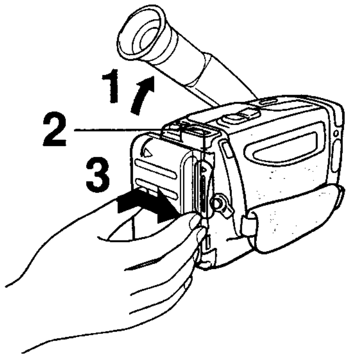
4 **Set the selector to "CHARGE" position.**
When charging is finished, the charge lamp goes out.

	NP-55	NP-55H	NP-77H/ 77HD	NP-77	NP-66H
Required charging time*	60	70	140	120	110
Battery life**	60	70	140	120	115

* Approximate minutes using AC-V35
** Approximate minutes using fully charged battery pack, continuous recording indoors

(continued)

(D-2)



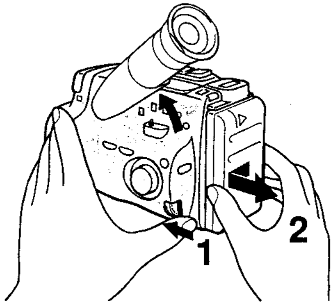
Step 2

Mount the battery pack on the camcorder. (D-2)

1. **Lift up the viewfinder.**
2. **Align the right side of the battery pack with the white line on the camcorder.**
3. **Slide the battery pack to the right.**

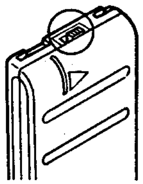
Note
Make sure that the battery fits completely on the mounting surface of the camcorder.

(D-3)



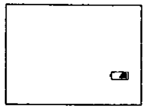
To remove the battery pack
(D-3)
While pressing the BATT knob in the direction of the arrow **(1)**, slide the battery pack to the left and pull it out as illustrated **(2)**.

(D-4)



How to use the switch on the battery pack
(D-4)
This switch is provided so that you can remember the charging condition. Set the switch to the "no mark" position when charging is completed. Set the switch to the "red mark" position when the battery is dead.

(D-5)

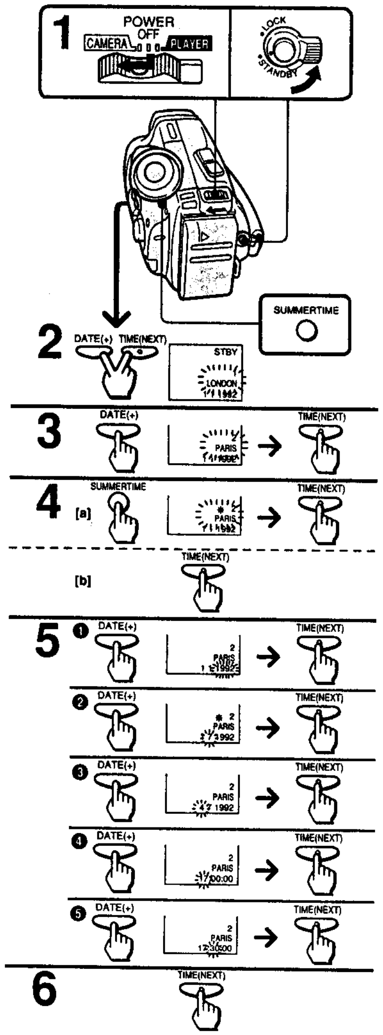


Remaining battery indicator
You can check the remaining battery capacity with the remaining battery indicator inside the viewfinder. The decreasing white bar indicates decreasing battery power. **(D-5)**

Note
The remaining battery indicator of the camcorder may indicate a different remaining capacity from that of the NP-77HD battery pack. The indicator of NP-77HD is more accurate.

Other options for charging
- AC-V55 AC power adaptor:
  You can charge two battery packs simultaneously.
- AC-S10 AC power adaptor:
  This adaptor has a discharging function. When you want charging only, slide the skip switch on the adaptor in the direction of the arrow.
- BC-55 portable battery charger:
  You can charge a battery pack on 100–240 V AC.
- DC-S10 car battery charger:
  This charger has a discharging function. When you want charging only, slide the skip switch on the charger in the direction of the arrow.

(F)


1
POWER
OFF
CAMERA
PLAYER
LOCK
STANDBY
SUMMERTIME
2
DATE(+)
TIME(NEXT)
STBY
LONDON
1992
3
DATE(+)
PARIS
TIME(NEXT)
4
SUMMERTIME
[a]
PARIS
TIME(NEXT)
[b]
TIME(NEXT)
5
❶ DATE(+)
TIME(NEXT)
❷ DATE(+)
TIME(NEXT)
❸ DATE(+)
TIME(NEXT)
❹ DATE(+)
TIME(NEXT)
❺ DATE(+)
TIME(NEXT)
6
TIME(NEXT)

Preparing your camcorder 3

Setting the Date and Time

(F)

Make sure that a power source and lithium battery are installed.

1 **While pressing the green button, set the POWER switch to CAMERA, and turn STANDBY up.**

2 **Press DATE (+) and TIME (NEXT) simultaneously for more than 2 seconds until "1 LONDON" flashes inside the viewfinder.**
DATE (+) now functions as + (to advance numbers) and TIME (NEXT) functions as NEXT (to execute).

3 **Press DATE (+) until your area name and number appear and then press TIME (NEXT).**

Countries	Area name	Area number
The United Kingdom and Portugal (GMT)	LONDON	1
Other European countries (CET)	PARIS	2
Finland, Greece, etc.	CAIRO	3

4 **Choose one of the following options to set the clock:**
[a] To set to summer time, press SUMMERTIME. Then press TIME (NEXT). The ☀ indicator appears inside the viewfinder.
[b] To set to standard time, press TIME (NEXT).

5 **Set the year*, month, day, hour and minute, in this order.**
First adjust the flashing digits with DATE (+) and then press TIME (NEXT).
* To set the year to 1992, no need to press DATE (+) in step 5 – ❶.

6 **Press TIME (NEXT).**
The clock starts operating.

To correct the date and time setting
Press TIME (NEXT) repeatedly until the digits of minute stop flashing. Then repeat step 2 to 6.

Setting the Date and Time

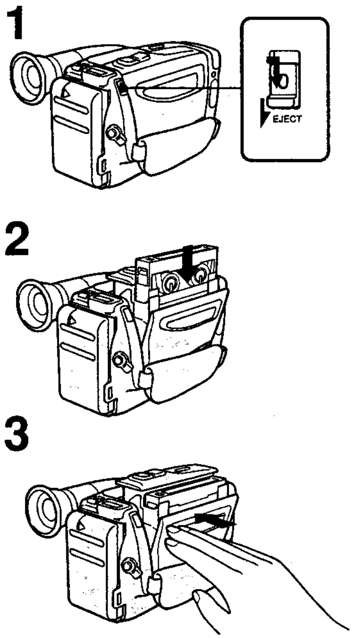
To advance the digits faster
Keep DATE (+) pressed.

To check the preset date and time
Press DATE (+) or TIME (NEXT). When you press the same button again, the indicator goes off.

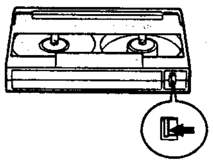
To reset to standard time
Press SUMMERTIME. The ☀ indicator goes off.

If the camcorder goes off abruptly while setting the date and time
If you leave the camcorder in the standby mode for 5 minutes or more, the camcorder will go off automatically. Turn STANDBY down once and slide it up again.

(G-1)



(G-2)



Preparing your camcorder 4

Inserting a Cassette

Inserting a Cassette

(G-1)

Make sure that a power source is connected.

1 **While pressing the small button on the EJECT knob, slide the knob down.**
The cassette compartment automatically lifts up and opens toward you.

2 **Insert a tape with the window facing out.**

3 **Close the cassette holder by pressing the "PUSH" mark on the cassette holder.**

Ejecting the Cassette

Make sure that a power source is connected.

1 **While pressing the small button on the EJECT knob, slide the knob down.**

2 **Take out the tape.**

3 **Close the cassette holder by pressing the "PUSH" make on the cassette holder.**

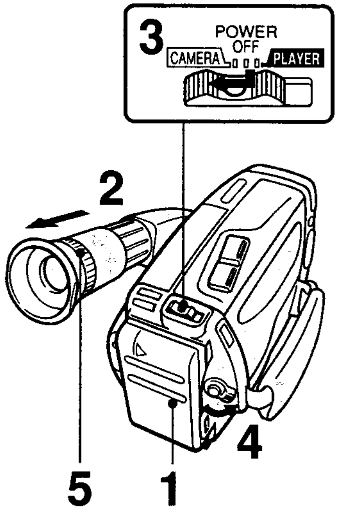
Preventing Accidental Erasure

(G-2)

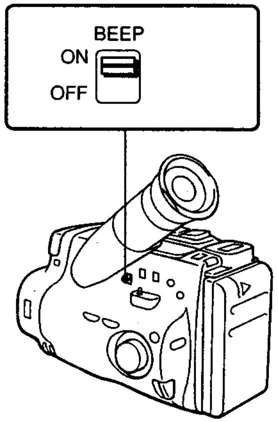
Slide the tab on the cassette to expose the red mark. This will prevent accidental erasure of the recording.
To re-record on this tape, slide the tab back out covering the red mark.
If you try to record with the red mark exposed, the ⊡ and ⏏ indicators flash inside the viewfinder.

Note on handling tapes
Never insert anything in the small holes on the rear of the cassette. These holes are used to sense the type of tape, thickness of tape, or if the tab is out or in, etc.

(H)



(I)



Preparing your camcorder 5

Adjusting the Viewfinder Lens

The position of the viewfinder lens for optimum vision varies depending on the person. Adjust it when you use the camcorder for the first time, or when you use it after someone else did.
(H)

1 **Make sure that the power source is connected and that the cassette is inserted.**

2 **Pull the viewfinder out until it clicks.**

3 **While pressing the green button, set the POWER switch to CAMERA.**

4 **Turn STANDBY up.**

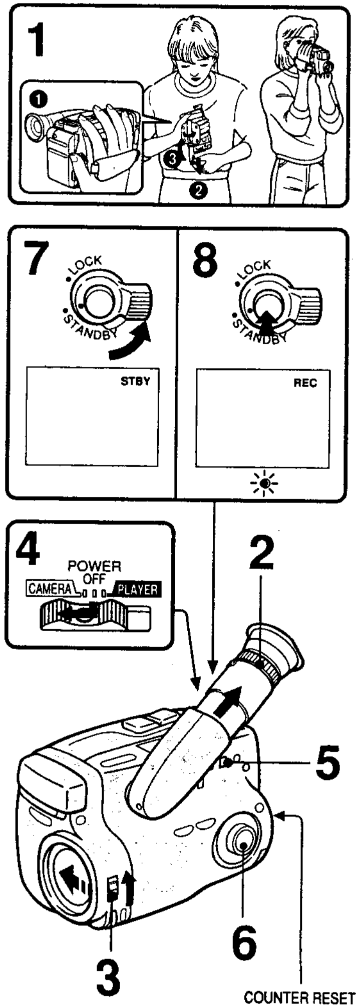
5 **Turn the viewfinder lens adjustment ring so that "STBY" displayed in the viewfinder screen comes into sharp focus.**

Checking the BEEP Switch

(I)

A beep sounds when you start recording and two beeps sound when you stop recording, confirming the operation.
Several beeps also sound as a warning of any unusual condition of the camcorder. Note that the beep sound is not recorded on the tape.
If you do not want to hear the beep sound, set the BEEP switch to OFF.

(J-1)



Recording a Picture Using Automatic Adjustments

Before recording "once-only" events, we strongly recommend you make a trial recording and check that everything is working properly.

If you set the date (page 19), the date is automatically recorded for 10 seconds after you start recording (Auto Date feature). This feature works only once a day.
If you set the BEEP switch to ON, beeps sound when you start or stop recording or when you make a mistake in the operation.

Start Recording

(J-1)

1 **Hold the camcorder as illustrated.**

2 **Make sure that the viewfinder is pulled out.**

3 **Slide LENS COVER to OPEN.**
If it is not open, you cannot record.

4 **While pressing the green button, set the POWER switch to CAMERA.**

5 **Set the REC MODE switch to LP (long play) or SP (standard play), according to the length of your planned recording.**

6 **Set the white mark of the PROGRAM AE dial to the green position.**

7 **Turn STANDBY up.**
"STBY" appears inside the viewfinder.

8 **Press START/STOP.**
"REC" appears and the red lamp lights up inside the viewfinder. The camcorder is now recording.

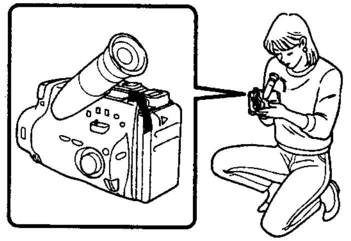
To standby (to stop momentarily)
Press START/STOP again.
"STBY" appears inside the viewfinder. The camcorder is in standby mode again.

To stop
Turn STANDBY down and set the POWER switch to OFF.

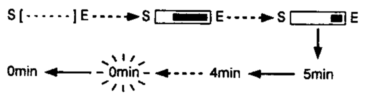
To reset the counter to 0:00:00
Press COUNTER RESET.

Notes on recording
- Shoot the subject at the wide-angle position in macro. At the telephoto position, if the subject is closer than 80 cm, it cannot be brought into focus.
- To record from the beginning of the tape, run the tape for about 15 seconds before recording. This will avoid missing the starting point when the tape is played back.

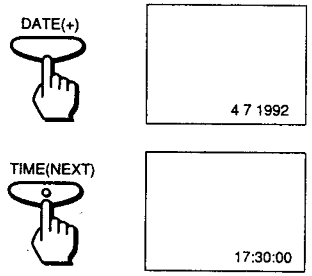
(J-2)



(J-3)



(J-4)



Recording a Picture Using Automatic Adjustments

For low-position recording (J-2)
The viewfinder can be turned 90 degrees upward.
It can be used in either the pushed-down or pulled-out position.

To check the remaining time of the tape during recording (J-3)
In recording mode, the remaining tape length indicator appears inside the viewfinder and changes as illustrated.

Near the end of the tape
The ▭ indicator, the red lamp inside the viewfinder, and the camera recording/battery lamp on the camcorder flash slowly. When the tape reaches the end, the flashing becomes rapid.

Note on the standby mode
If you leave the camcorder in standby mode for 5 minutes or more, the camcorder will go off automatically. To resume standby mode, turn STANDBY down once and slide it up again. To start recording, press START/STOP directly.

Note on the auto date feature
The auto date feature works once a day.
However, the date may automatically appear more than once a day when:
- you reset the date and time.
- you eject and insert the tape again.
- you stop recording within 10 seconds.

Recording mode
You can record and play back a picture on a tape in both SP (standard play) and LP (long play) modes.
However, the quality of the playback picture in the LP mode will not be as good as that in the SP mode.

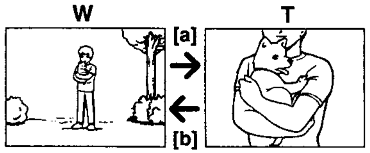
Recording Date or Time

(J-4)

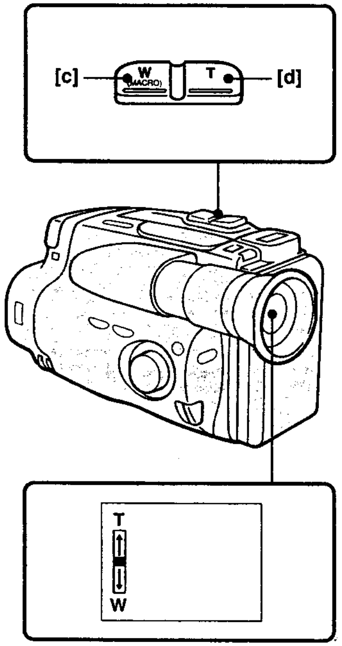
During camera recording or when in standby mode, press DATE(+) for date indicator or TIME(NEXT) for time indicator.
The date or time displayed inside the viewfinder is recorded with the picture.

To stop recording date or time
Press DATE(+) or TIME(NEXT) again.
The date or time indicator disappears.
The picture recording continues.

(J-5)



(J-6)



Recording a Picture Using Automatic Adjustment

Using Zooming Features

(J-5)

By zooming, you can change the size of the subject in the scene. Use "zoom-in (Telephoto)" for dramatic close-ups **[a]**, and "zoom-out (Wide-angle)" for panoramic long shots **[b]**. Also use the zoom to focus manually or to decide the shooting angle.
For more professional-looking recordings, use zooming sparingly.

Dual-Speed Zooming (J-6)

The camcorder's power zoom button offers dual speed zooming. Press it firmly for high speed zooming and softly for relatively slow zooming.

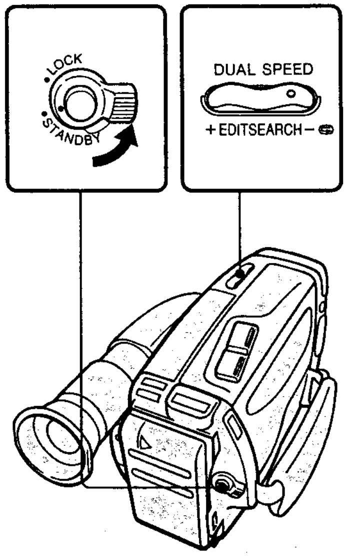
[c] W side: for wide-angle (subject appears farther away)
[d] T side: for telephoto (subject appears closer)

Autofocusing in macro
Even small subjects, such as flowers, insects, and images in photographs, can literally fill the screen using autofocusing in macro.
We recommend you to use a tripod when shooting in macro.

1. **Bring the camcorder as close as necessary to obtain the desired subject size.**
2. **Keep pressing the W (MACRO) side of the power zoom button until the zooming stops (wide-angle).**

Manual focusing in macro
You can also shoot with manual focus while doing close-up.
For manual focusing, see page 27.

(J-7)



Recording a Picture Using Automatic Adjustments

Checking the Recorded Picture Inside the Viewfinder (EDITSEARCH)

(J-7)

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture inside the viewfinder. After checking your recorded picture, you can also re-record over a previously recorded portion.

To review the last recorded scene — Rec Review
You can check the last portion of a scene you just recorded in CAMERA mode. This is convenient for quick, on-the-spot checks.

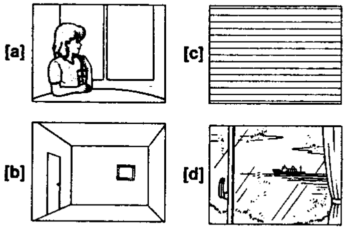
1. **Set the camcorder in standby mode by turning STANDBY up.**
2. **Press the – side of EDITSEARCH (⊜) momentarily.**
   The last few seconds of the recorded portion are played back inside the viewfinder. Then, the camcorder goes back to standby mode, ready for the next recording.

To check your recorded picture
You can check the recorded picture inside the viewfinder. After checking, you can also re-record over a previously recorded portion.

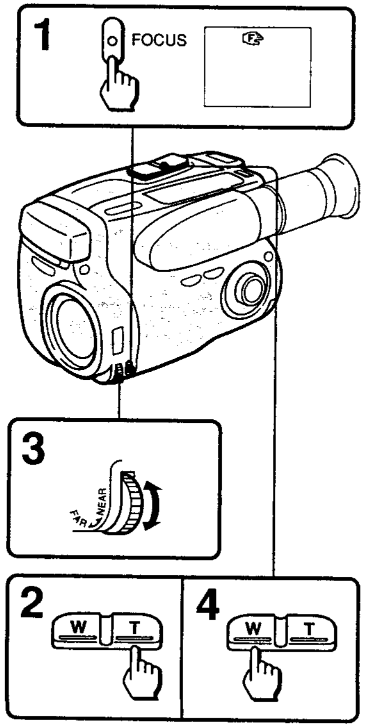
1. **Set the camcorder in standby mode by turning STANDBY up.**
2. **Keep pressing the + side or – side of EDITSEARCH to play back the picture while looking inside the viewfinder.**
   + side: to view the forward playback picture
   – side: to view the reverse playback picture
   Press EDITSEARCH softly to transport the tape at normal speed or firmly to trransport the tape at high speed.
   To stop playback, release EDITSEARCH.
3. **If you want to re-record over a recorded portion, follow the procedures below:**
   ❶ Press the + side or – side of EDITSEARCH to locate the point you want to begin re-recording.
   ❷ Press START/STOP to begin re-recording. Re-recording begins from the point you released EDITSEARCH. As long as the tape is not ejected, the transition between the scenes will be smooth.

Dual speed EDITSEARCH button
The camcorder's EDITSEARCH button offers dual speed transport of the tape.
Press it softly to transport the tape at normal speed (◀ or ▶ appears inside the viewfinder), or firmly to transport the tape at high speed (⊜ or ⊜ appears inside the viewfinder).

(K-1)



(K-2)



Manual Focusing

We recommend manual focusing in the following cases. **(K-1)**

[a] Too bright behind the subject
[b] Subjects with little contrast—wall, sky, etc.
[c] Horizontal stripes
[d] Subject through frosted glass

- Insufficient light
- One subject is close; the other is in the center, but at a distance
- Subjects beyond nets, etc., or another subject passes in front of the camcorder
- Bright subject or subject reflecting light
- High contrast behind the subject (the background may be in focus)
- When shooting a stationary subject using tripod
- When you want to save battery power

Focusing Manually

(K-2)

1 **Press FOCUS .**
The (manual focusing) indicator appears inside the viewfinder.

2 **Keep pressing the T side of the power zoom button until the zooming stops (telephoto).**

3 **Turn the focus dial to achieve sharp focus.**

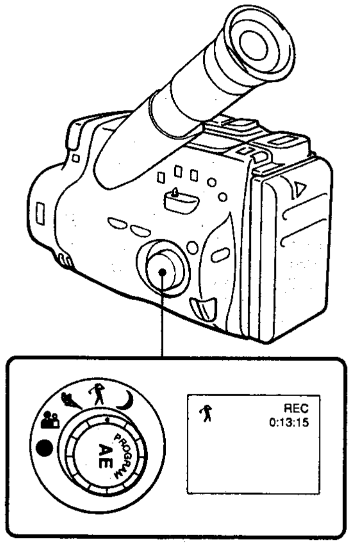
4 **Keep pressing the W side of the power zoom button to obtain the desired subject size.**

To reactivate autofocusing
Press FOCUS again so that the indicator disappears.

Shooting in relatively dark places
Shoot at wide angles after focusing in telephoto.

Note
The focus dial does not have a stop position.

(L-1)



Using the PROGRAM AE Function

When you use the PROGRAM AE (Auto Exposure) function, you can create a "portrait" effect or capture high-speed action using the "sports" mode or "high-speed shutter" mode. When you record fireworks or neon signs, use "twilight" mode.

(L-1)

Set the white mark of the PROGRAM AE dial to the desired PROGRAM AE mode.
The indicator of the selected PROGRAM AE mode appears inside the viewfinder.

The PROGRAM AE mode indicator changes as follows:

No indicator (normal mode)
↕
("Portrait" mode)
↕
("Sports" mode)
↕
("High-speed shutter" mode)
↕
("Twilight" mode)

To restore automatic adjustment
Set the white mark of the PROGRAM AE dial to the green position.

(L-2)

[a]

[b]

[c]

[d]

Using the PROGRAM AE Function

To select the mode
(L-2)
You may want to use the respective mode when shooting the following subjects or when shooting under the following conditions:

[a] Portrait mode
- A still subject such as a person or flower
- Subject behind an obstacle such as a net
- Zooming on a subject in the telephoto mode

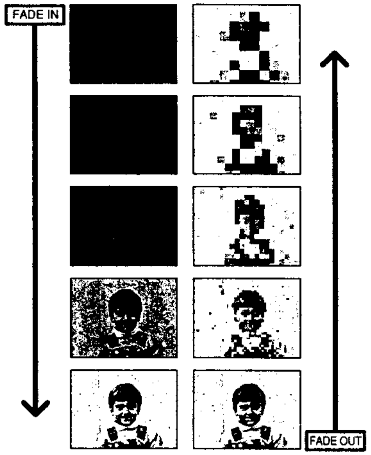
[b] Sports mode
- Recording a landscape while in a moving car
- Outdoor sports scene such as football or tennis
- Subjects moving at high speed, such as a roller coaster on a cloudy day

[c] High-speed shutter mode
- Shooting a golf swing or a tennis match with the tennis ball captured clearly on a fine day
- You wish to play back certain scenes having high speed movement and getting a clear, sharp picture

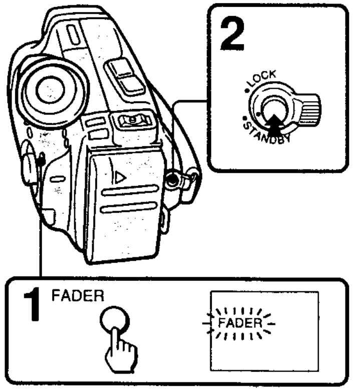
[d] Twilight mode
- Recording a night view, fireworks, or neon signs

Note
The shutter speed in each PROGRAM AE mode is as follows:
- Portrait mode — between 1/60 to 1/2000
- Sports mode — between 1/60 to 1/500
- High-speed shutter mode — 1/4000
- Twilight mode — 1/60

(M-1)



(M-2)



Fade-in and Fade-out

(M-1)
You can fade-in or fade-out to give your recording a professional touch.
When fading-in, the picture will gradually appear from black or mosaic. The sound will also gradually increase.
When fading-out, the picture will gradually fade to black or mosaic. The sound will also gradually decrease.

Fading-in or fading-out (M-2)
Each time you press FADER, the indicator inside the viewfinder changes as follows:

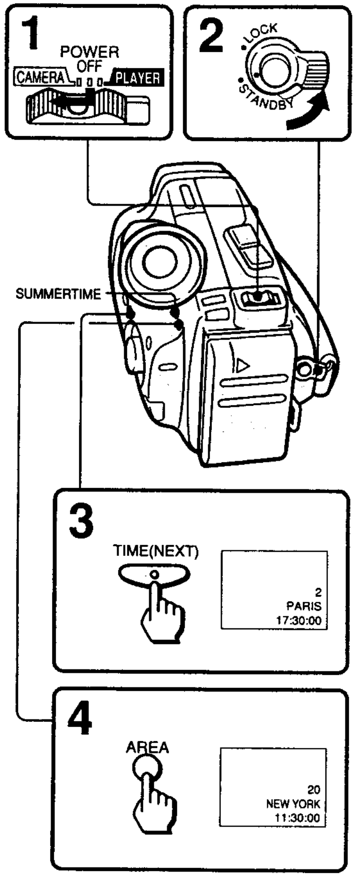
(No indicator) → FADER (black fade) → M. FADER (mosaic fade)

1 Select the type of fade by pressing FADER as follows:
[a] When fading-in, press FADER after turning STANDBY up to put the camcorder into standby mode.
The fade indicator starts flashing.
[b] When fading-out, press FADER while recording.
The fade indicator starts flashing.

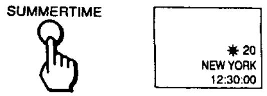
2 Press START/STOP.
When fading-in, the fade indicator stops flashing and the recording starts fading-in.
When fading-out, the fade indicator stops flashing and the picture fades out and then the recording stops.

To cancel the fade-in/fade-out function before it is performed
Before pressing START/STOP, press FADER until the fade indicator disappears.

(N-1)


1
POWER
OFF
CAMERA
PLAYER
2
LOCK
STANDBY
SUMMERTIME
3
TIME(NEXT)
2
PARIS
17:30:00
4
AREA
20
NEW YORK
11:30:00

(N-2)


SUMMERTIME
✱ 20
NEW YORK
12:30:00

Using the World Clock

This camcorder has a world clock. While traveling abroad, you can easily adjust time of the place where you are using the camcorder by pressing AREA.
Before pressing AREA, set the date and time in your country (see page 19).

(N-1)

1 **While pressing the green button, set the POWER switch to CAMERA.**

2 **Turn STANDBY up to set the camcorder in standby mode.**

3 **Press TIME (NEXT).**
The time in your country appears inside the viewfinder.

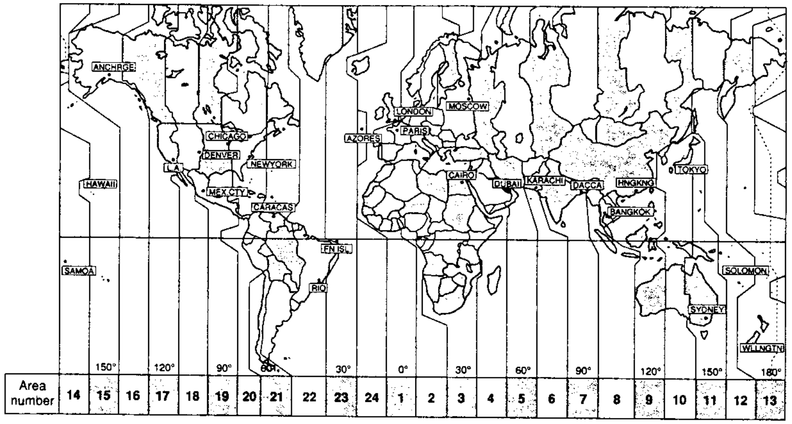
4 **Press AREA until the area name and number where you are now using the camcorder appear.**
You can find the area name and number in the "Time Zone Chart" on the pages 32 and 33.

To check the date
Press DATE (+).
To turn off the date indication, press DATE (+) again.

To reset to your country area time
Press AREA until your country area and number appears.

To set summer time (N-2)
Press SUMMERTIME. Time changes to summer time. ✱ indicator appears inside the viewfinder.
To set to standard time, press SUMMERTIME again.

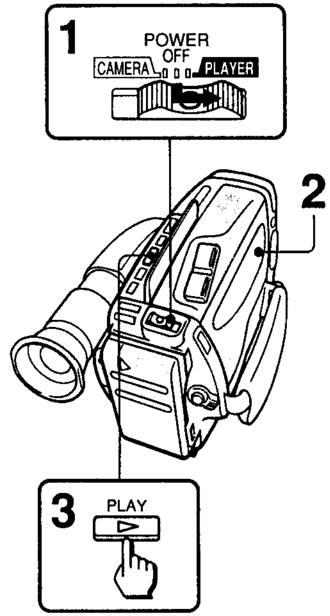
Time Zone Chart


ANCHRGE
HAWAII
SAMOA
L.A.
DENVER
CHICAGO
NEWYORK
MEX.CTY
CARACAS
RIO
FN.ISL
AZORES
LONDON
PARIS
MOSCOW
CAIRO
DUBAI
KARACHI
DACCA
HNGKNG
BANGKOK
TOKYO
SYDNEY
SOLOMON
WLLNGTN
150°
120°
90°
60°
30°
0°
30°
60°
90°
120°
150°
180°
Area number
14
15
16
17
18
19
20
21
22
23
24
1
2
3
4
5
6
7
8
9
10
11
12
13

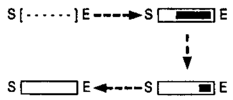
Area number	Area name	Countries or area*
1	LONDON	England, Morocco, Portugal, GMT (Greenwich Mean Time)
2	PARIS	Austria, France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland, CST (Continental Standard Time), Tunisia
3	CAIRO	Egypt, Finland, Greece, Israel, Turkey
4	MOSCOW	Ethiopia, Iraq, Kenya, Mauritius, Saudi Arabia, Seychells, former U.S.S.R (Moscow)
5	DUBAI	United Arab Emirates
6	KARACHI	Moldives, Pakistan
7	DACCA	Bangladesh, India, Myanmar
8	BANGKOK	Cambodia, Indonesia (Jakarta), Thailand, Vietnam
9	HNGKNG	Australia (Perth), China, Hong Kong, Indonesia*(Bali, Borneo), Malaysia, Philippines, Singapore, Taiwan
10	TOKYO	Japan, Korea
11	SYDNEY	Australia (Sydney)
12	SOLOMON	New Caledonia
13	WLLNGTN	Fiji, New Zealand
14	SAMOA	Western Samoa
15	HAWAII	Hawaii I., Tahiti, HST (Hawaii Standard Time)
16	ANCHRGE	U.S.A. (Alaska), AST (Alaska Standard Time)
17	L.A.	U.S.A. (Los Angeles, San Francisco), PST (Pacific Standard Time)
18	DENVER	U.S.A. (Denver), MST (Mountain Standard Time)
19	CHICAGO	Mexico, U.S.A. (Chicago), CST (Central Standard Time)
20	NEWYORK	Canada (Montreal), Jamaica, Peru, U.S.A. (New York, Washington D.C.), EST (East Standard Time)
21	CARACAS	Chile, Dominica, Venezuela
22	RIO	Argentina, Brazil, Uruguay
23	FN ISL.	Fernando de Noronha
24	AZORES	Azores Islands

* These are common names. The formal names may be different.

(P-1)



(P-2)



Playing Back a Tape

Turn on the TV, and select the channel for viewing a playback picture (set the TV/VIDEO selector to VIDEO).
Of course, you can monitor the playback picture inside the viewfinder at the same time.
(P-1)

1. **While pressing the green button, set the POWER switch to PLAYER.**
2. **Insert a tape.**
3. **Press ▷.**
   Playback starts.

To view a still picture, press ❚❚ during playback.
To resume playback, press ❚❚ or ▷ again.

Notes
- When still picture mode lasts for 5 minutes or more, the camcorder automatically enters stop mode.
- Streaks appear and sound is muted in still picture mode.

To rewind the tape, press ◄◄.

To advance the tape raidly, press ►►.

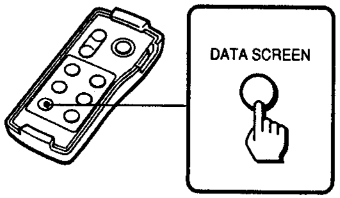
To stop the tape, press □.

To stop the tape momentarily, press ❚❚.

In playback pause mode, you can view the picture in a sequence of stop-motion images by pressing EDITSEARCH. If you keep pressing EDITSEARCH, you can view the picture playback in the forward or reverse direction.

To check the remaining time of the tape during playback (P-2)
In playback mode, the remaining tape length indicator appears inside the viewfinder and changes as illustrated.

(P-3)



Monitoring a High-Speed Picture

To locate a scene (picture search)
Keep pressing ◀◀ or ▶▶ during playback. You can monitor the picture at high speed as long as you keep pressing the button.
To resume a normal playback, release the button.

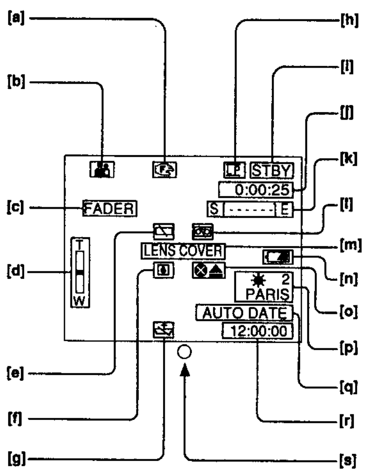
To locate a scene quickly (skip scan)
Keep pressing ◀◀ during rewinding, or ▶▶ while advancing the tape rapidly.
You can monitor the picture at high speed as long as you keep pressing the button.
To resume a normal fast forwarding or rewinding, release the button.
To resume a normal playback, press ▷.

Displaying the Viewfinder Screen Indicators on the TV

(P-3)

Press DATA SCREEN on the Remote Commander.
The indicators inside the viewfinder screen appear on the TV.
To erase the indicators, press DATA SCREEN again.

(T-1)



Indicators inside the Viewfinder

(T)

[a] Manual focusing

[b] Setting of PROGRAM AE mode

[c] FADER is pressed.

[d] Power zoom indicator

[e] "Replace battery."

[f] "Moisture has condensed."

[g] "Replace lithium battery."

[h] Recording/Playback mode (LP/SP)

[i] Tape transport and camera recording mode

[j] Tape counter

[k] Remaining tape length indicator

[l] "Exchange tape or no cassette inside."

[m] The lens cover is closed.

[n] Remaining battery indicator

[o] "Clean video heads (⊗)" or "trouble has occurred (⏏)".

[p] World clock indicator

[q] Auto date indicator

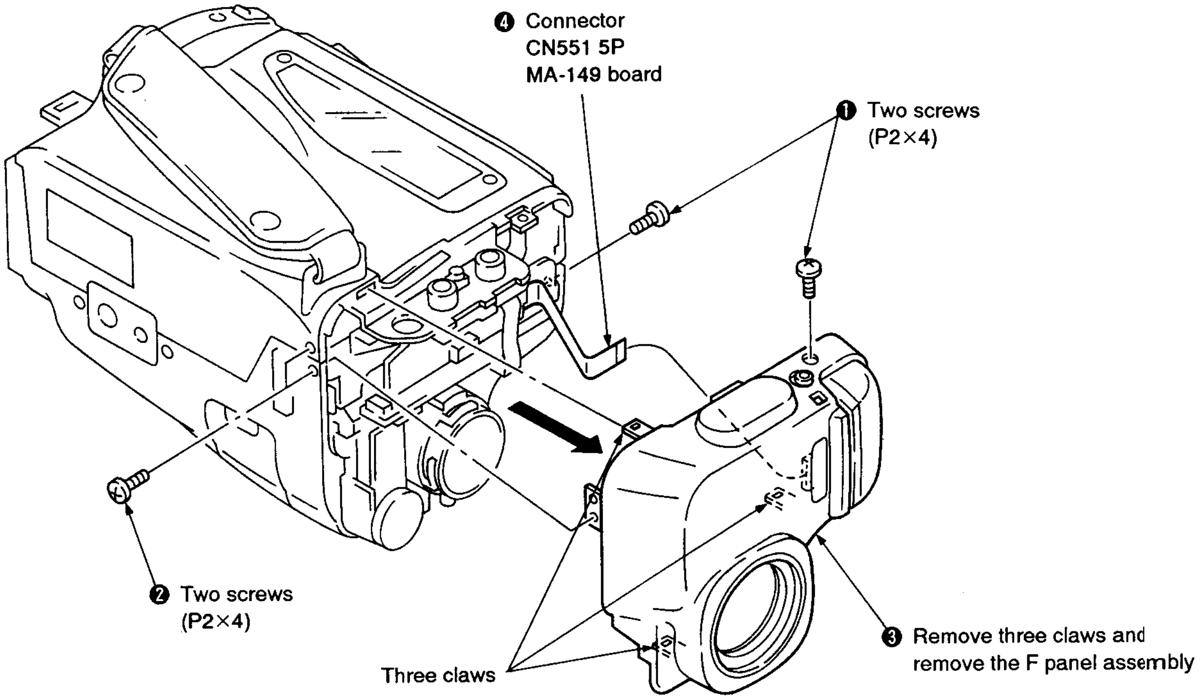
[r] Date or time

[s] Lights up during recording.
When flashing: "Replace battery."

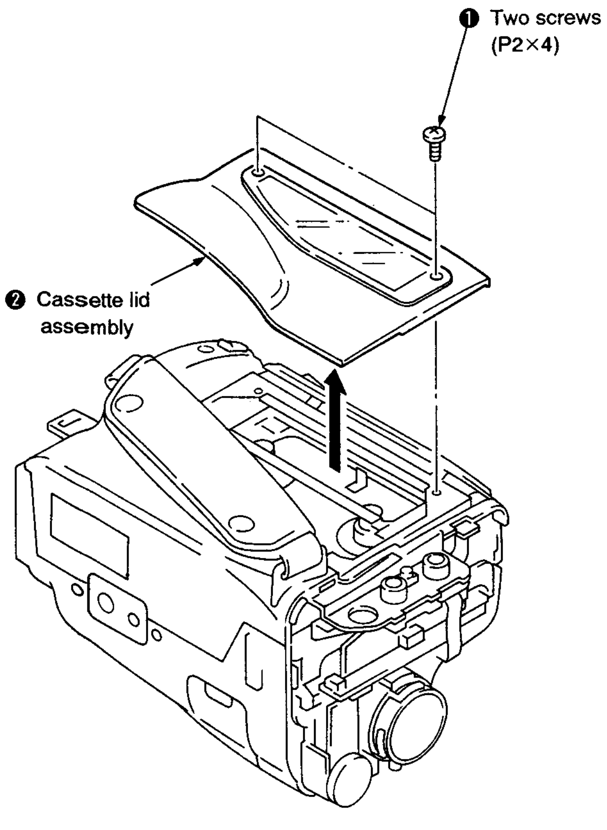
SECTION 2

DISASSEMBLY

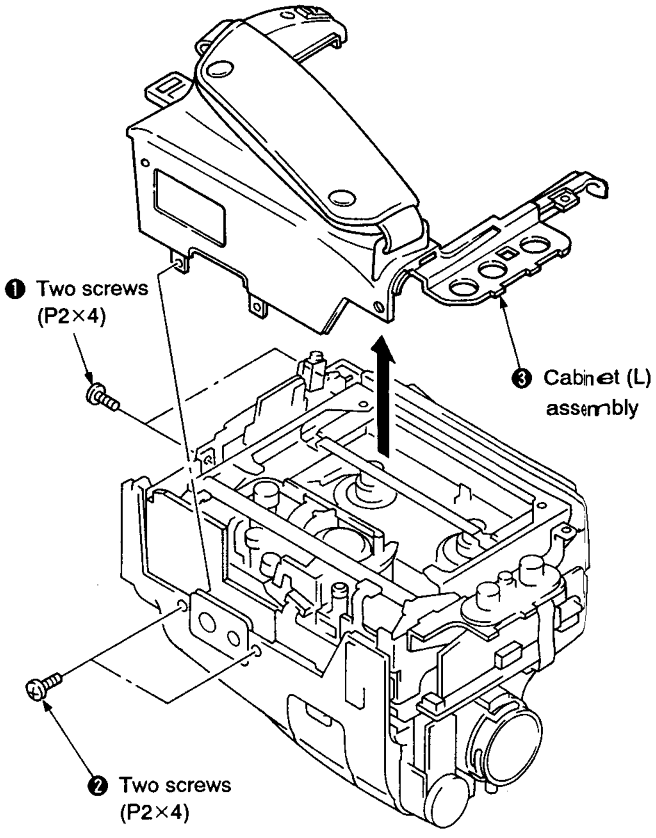
2-1. REMOVAL OF F PANEL ASSEMBLY


❹ Connector
CN551 5P
MA-149 board
❶ Two screws
(P2×4)
❷ Two screws
(P2×4)
Three claws
❸ Remove three claws and
remove the F panel assembly

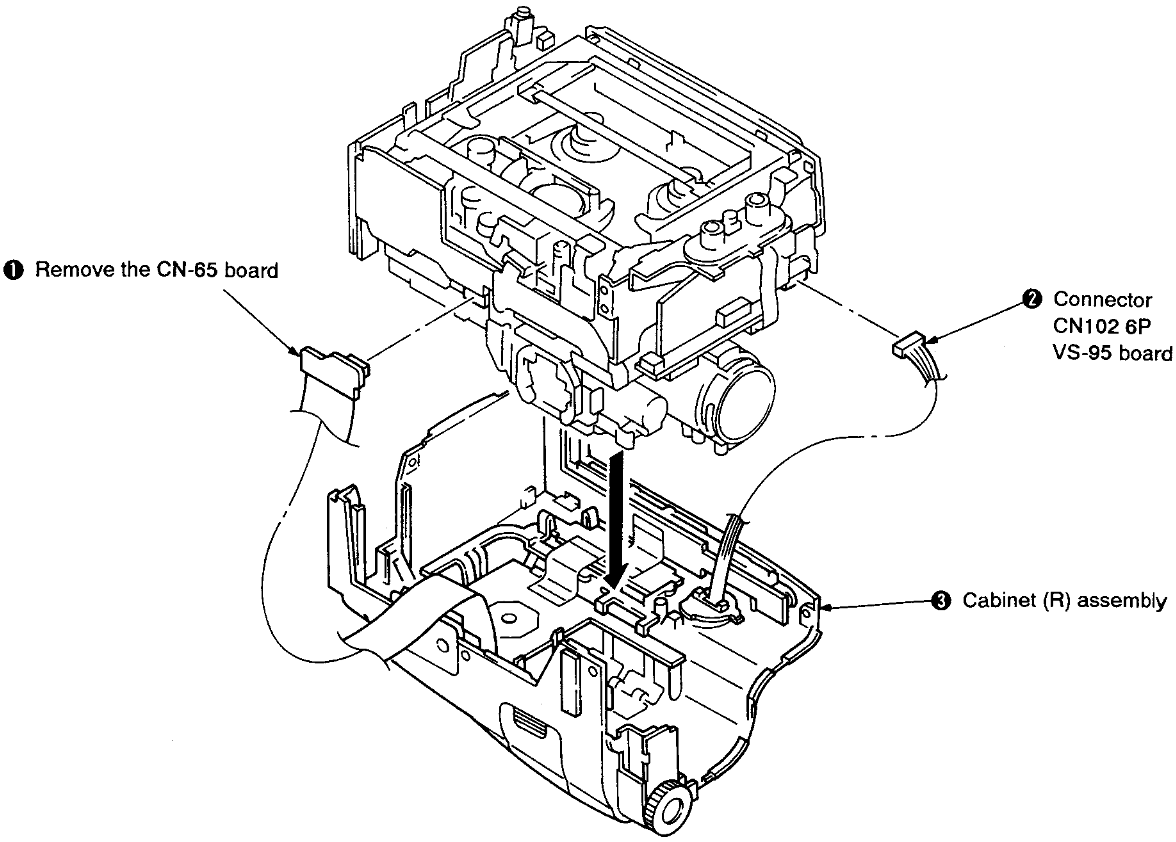
2-2. REMOVAL OF CASSETTE LID ASSEMBLY


❶ Two screws
(P2×4)
❷ Cassette lid
assembly

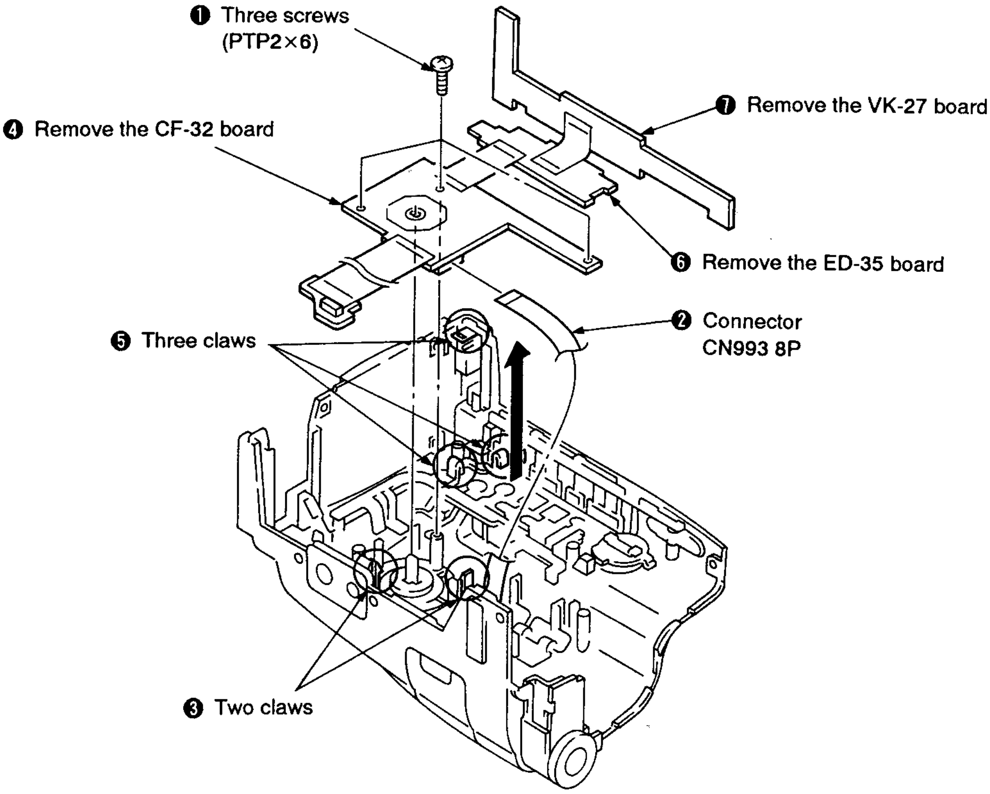
2-3. REMOVAL OF CABINET (L) ASSEMBLY


❶ Two screws
(P2×4)
❸ Cabinet (L)
assembly
❷ Two screws
(P2×4)

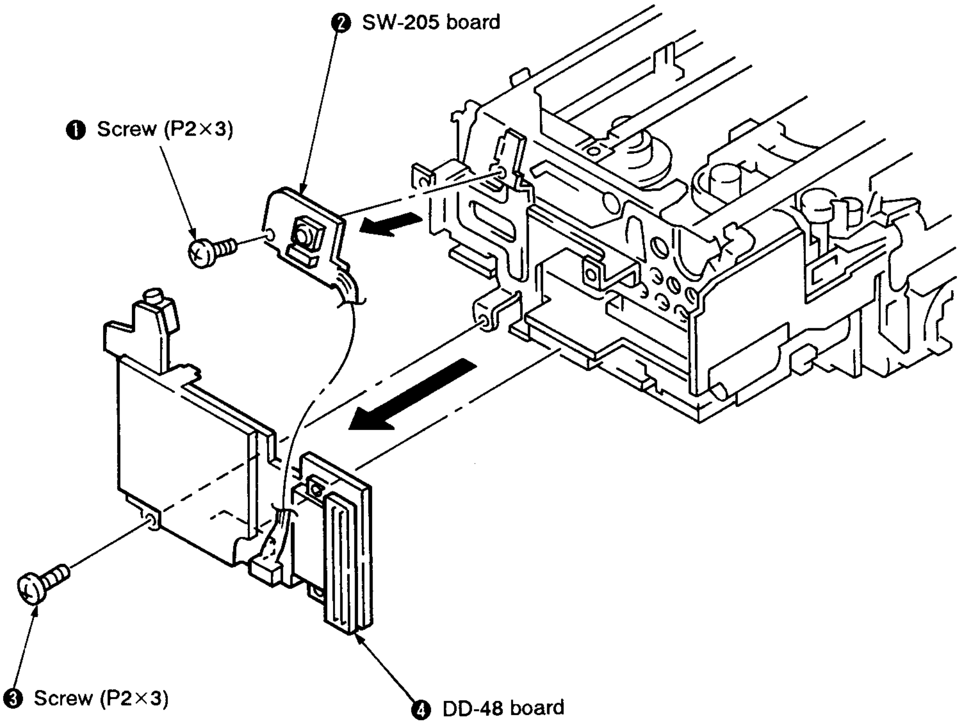
2-4. REMOVAL OF CABINET (R) ASSEMBLY


❶ Remove the CN-65 board
❷ Connector
CN102 6P
VS-95 board
❸ Cabinet (R) assembly

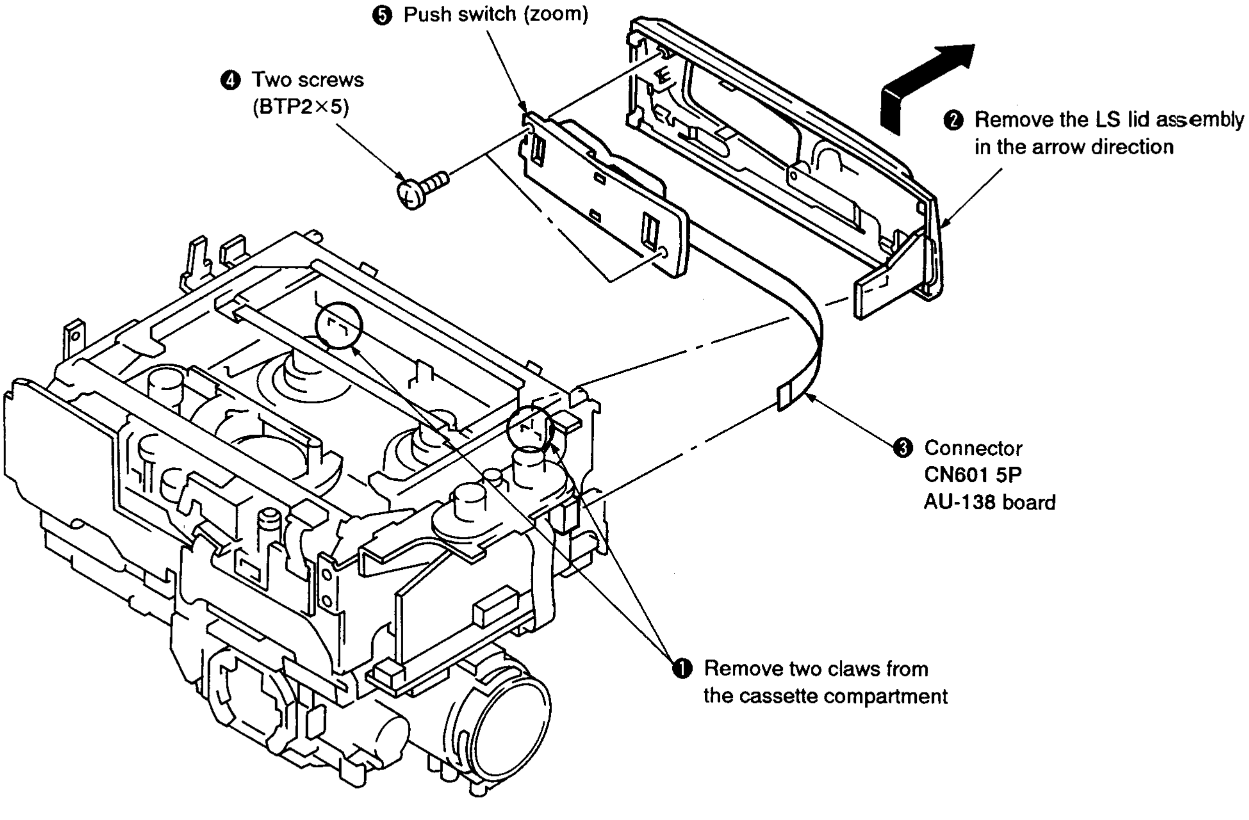
2-5. REMOVAL OF CF-32, ED-35 AND VK-27 BOARDS


❶ Three screws
(PTP2×6)
❼ Remove the VK-27 board
❹ Remove the CF-32 board
❻ Remove the ED-35 board
❷ Connector
CN993 8P
❺ Three claws
❸ Two claws

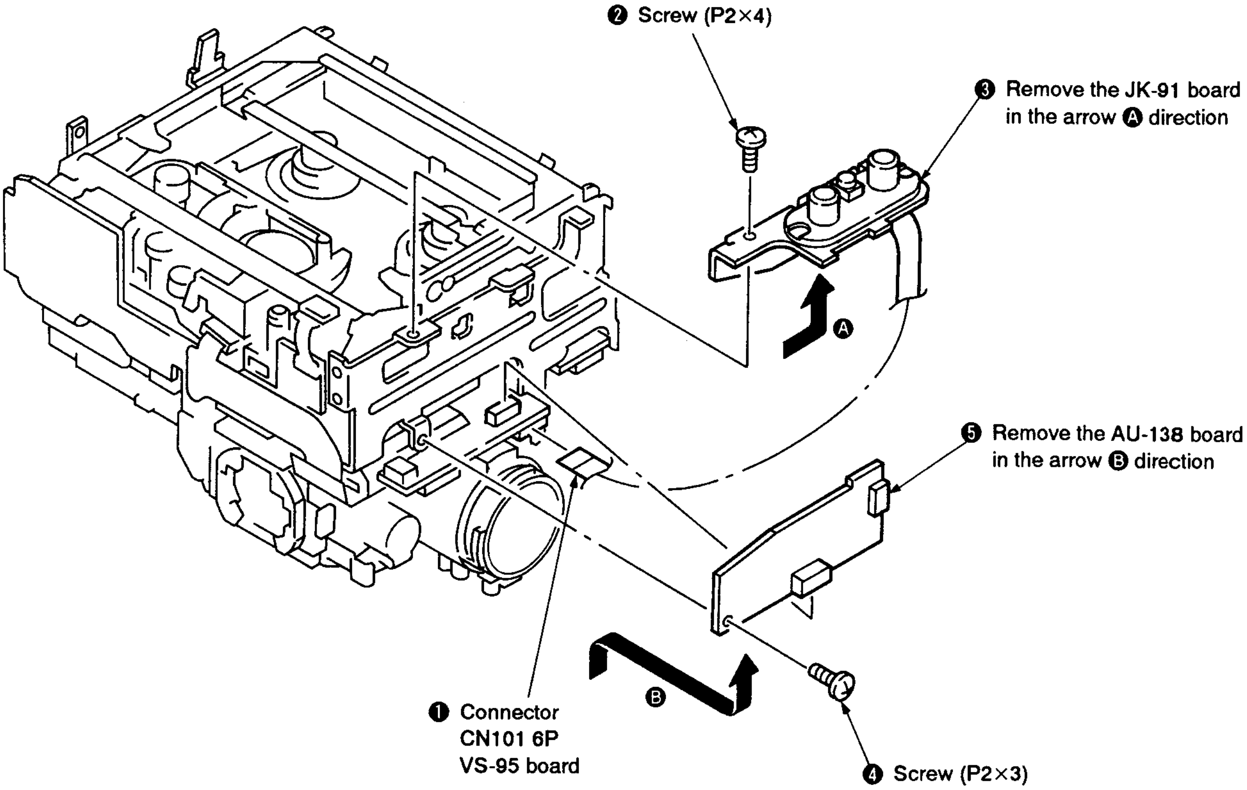
2-6. REMOVAL OF DD-48 AND SW-205 BOARDS


❷ SW-205 board
❶ Screw (P2×3)
❸ Screw (P2×3)
❹ DD-48 board

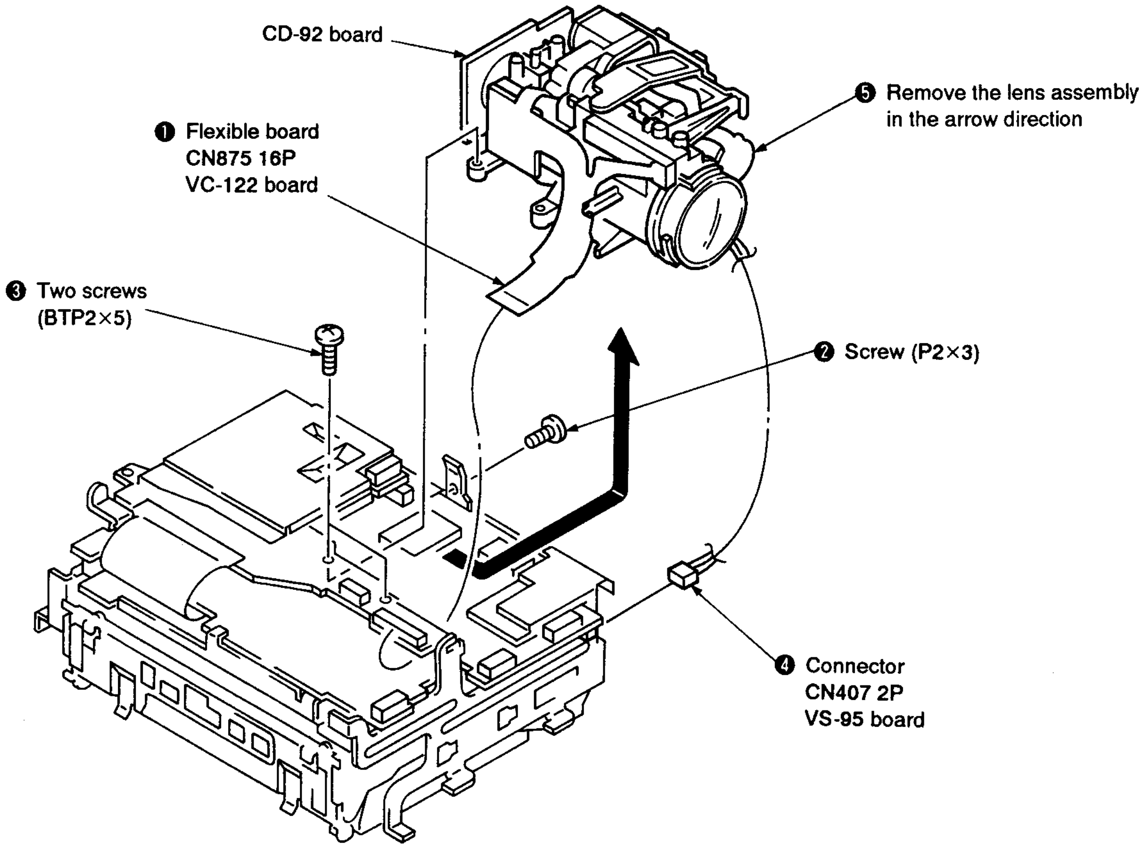
2-7. REMOVAL OF LS LID ASSEMBLY


❺ Push switch (zoom)
❹ Two screws
(BTP2×5)
❷ Remove the LS lid assembly
in the arrow direction
❸ Connector
CN601 5P
AU-138 board
❶ Remove two claws from
the cassette compartment

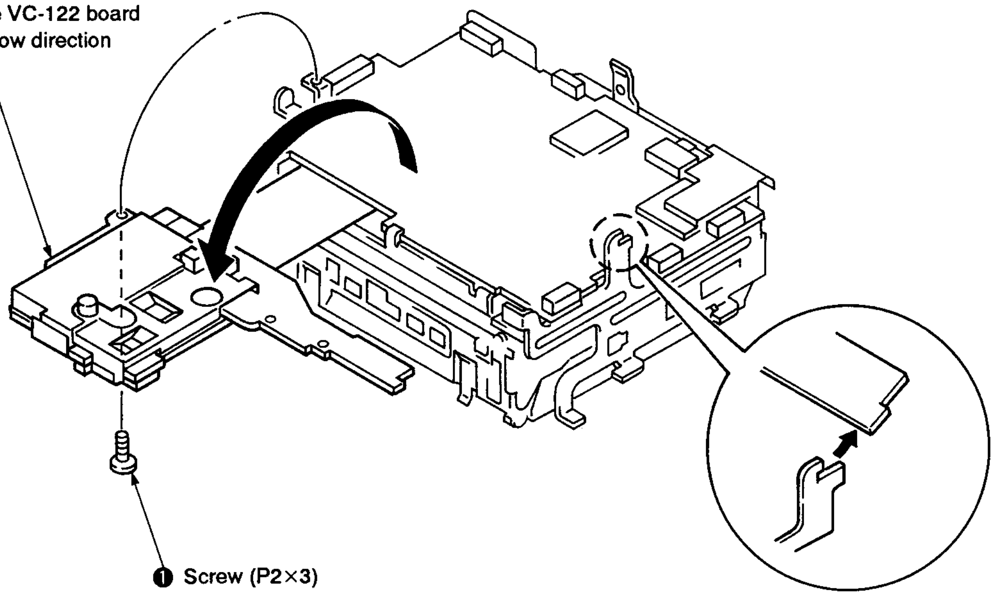
2-8. REMOVAL OF JK-91 AND AU-138 BOARDS


❷ Screw (P2×4)
❸ Remove the JK-91 board in the arrow Ⓐ direction
Ⓐ
❺ Remove the AU-138 board in the arrow Ⓑ direction
Ⓑ
❶ Connector CN101 6P VS-95 board
❹ Screw (P2×3)

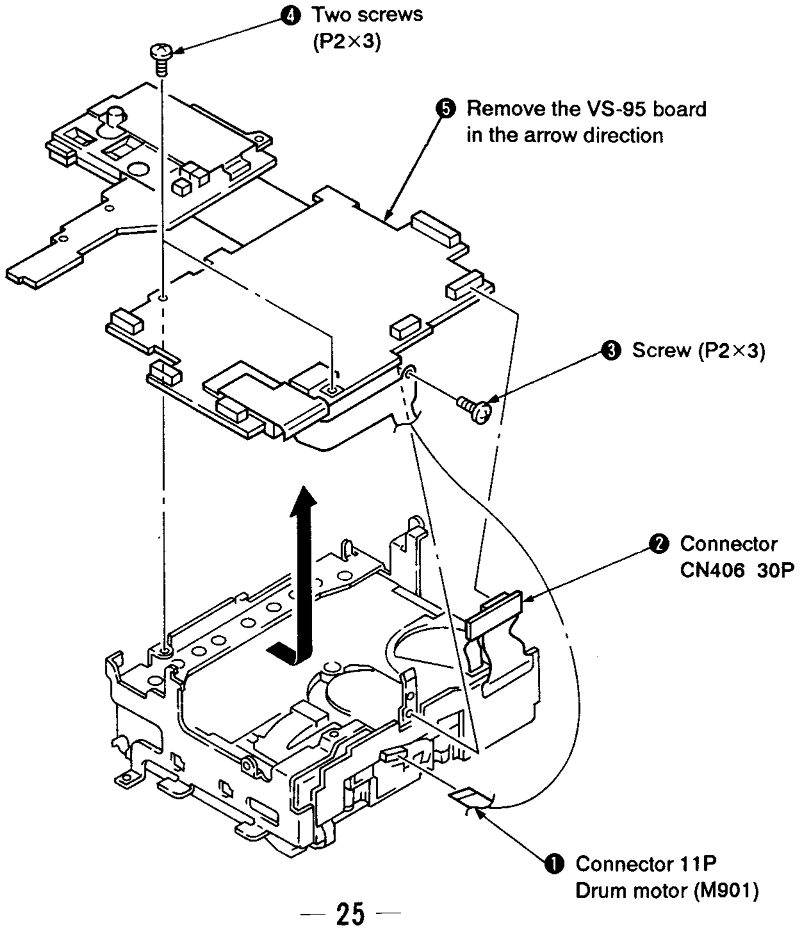
2-9. REMOVAL OF LENS ASSEMBLY (CD-92 BOARD)


CD-92 board
❶ Flexible board CN875 16P VC-122 board
❺ Remove the lens assembly in the arrow direction
❸ Two screws (BTP2×5)
❷ Screw (P2×3)
❹ Connector CN407 2P VS-95 board

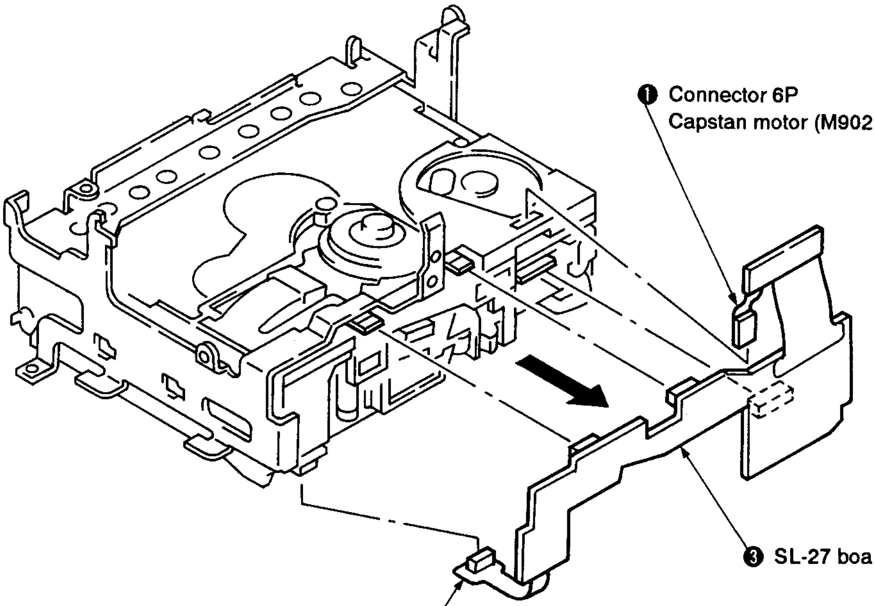
2-10. OPENING OF VC-122 BOARD


❸ Open the VC-122 board in the arrow direction
❶ Screw (P2×3)
❷ Remove the VC-122 board by removing claw of frame (Lower)

2-11. REMOVAL OF VS-95 BOARD


❹ Two screws (P2×3)
❺ Remove the VS-95 board in the arrow direction
❸ Screw (P2×3)
❷ Connector CN406 30P
❶ Connector 11P Drum motor (M901)

2-12. REMOVAL OF SL-27 BOARD

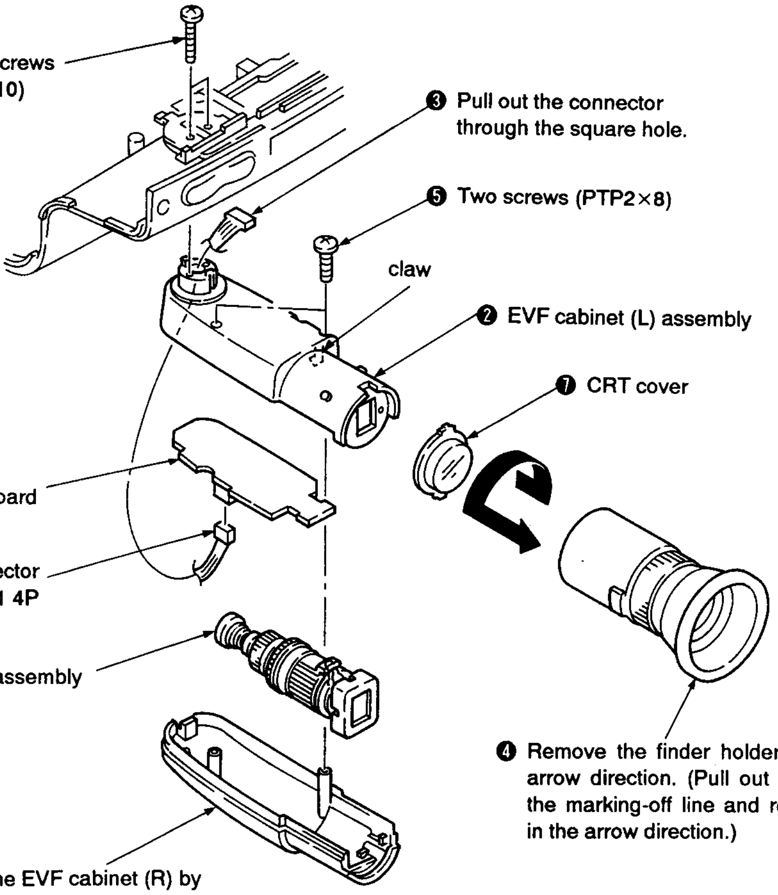


① Connector 6P
Capstan motor (M902)

③ SL-27 board

② Connector 4P
Loading motor (M903)

2-13. REMOVAL OF EVF ASSEMBLY (VF-42 BOARD)



① Two screws
(P2×10)

③ Pull out the connector
through the square hole.

⑤ Two screws (PTP2×8)

② EVF cabinet (L) assembly

⑦ CRT cover

⑨ Remove a claw and
remove the VF-42 board

⑩ Connector
CN501 4P

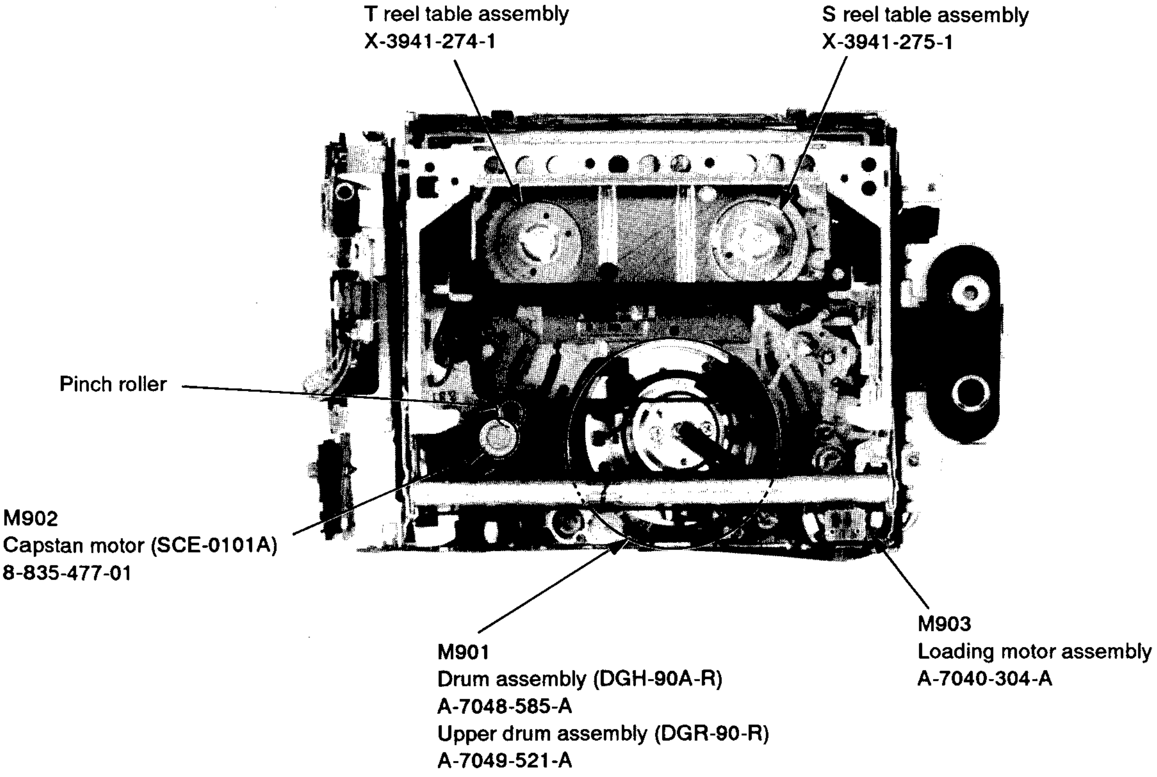
⑧ CRT assembly

④ Remove the finder holder assembly in the arrow direction. (Pull out to the position of the marking-off line and remove by turning in the arrow direction.)

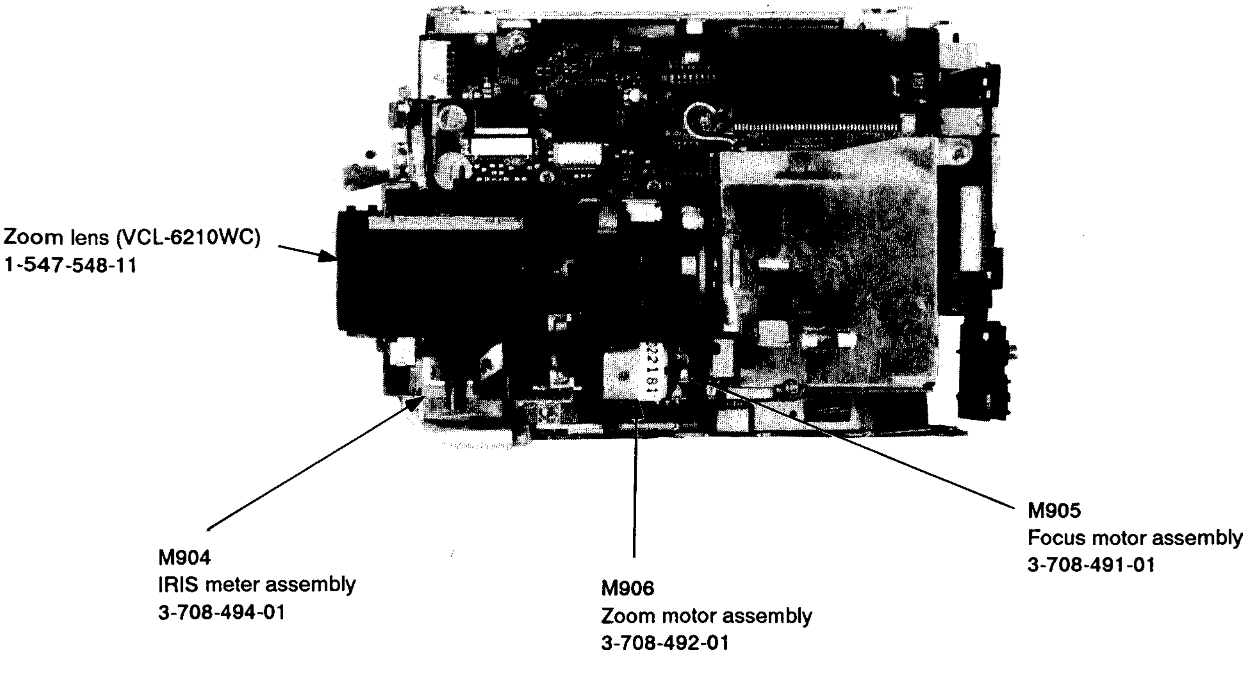
⑥ Remove the EVF cabinet (R) by
lifting up with the claw as its fulcrum

2-14. INTERNAL VIEWS

— Left side —

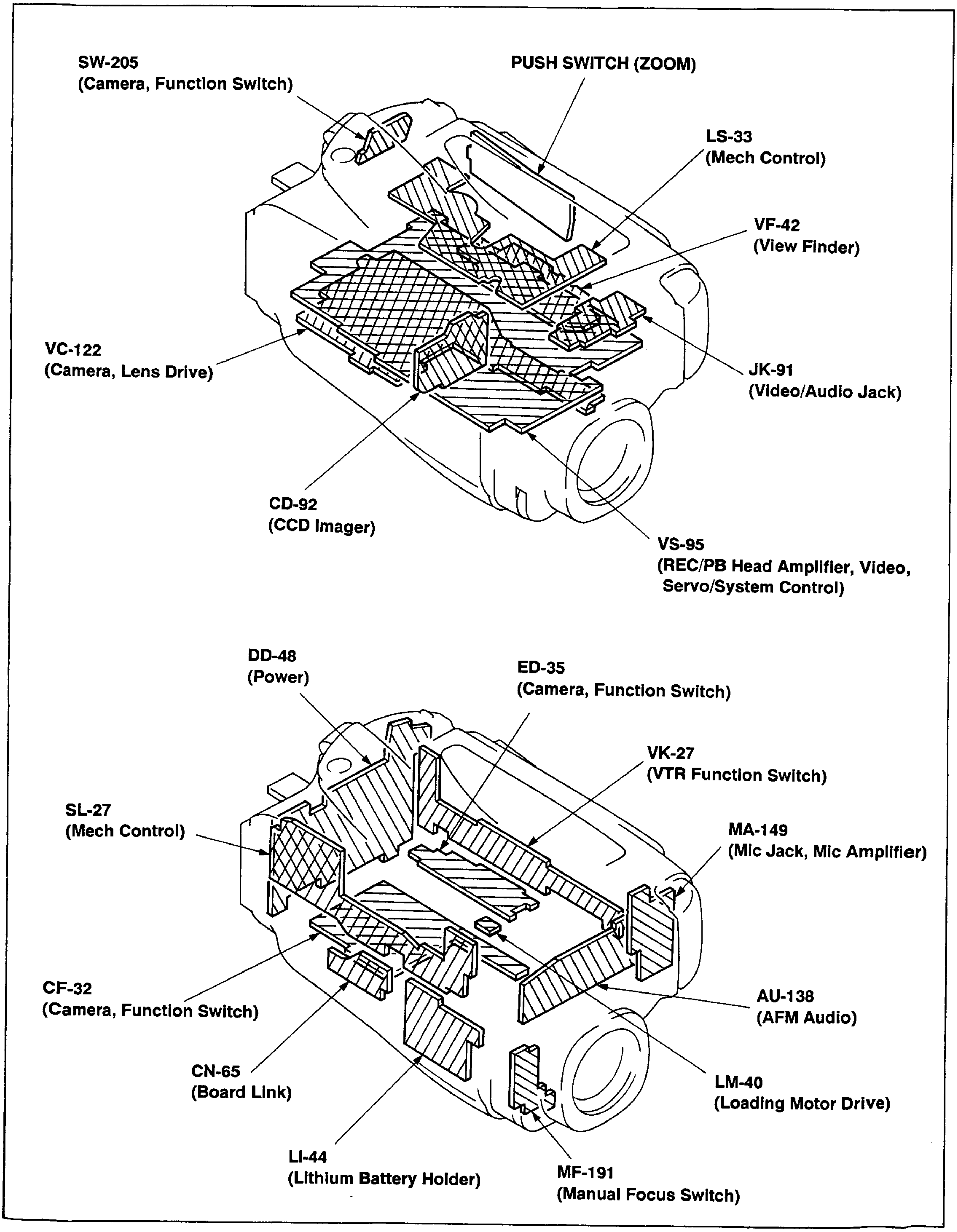

T reel table assembly
X-3941-274-1
S reel table assembly
X-3941-275-1
Pinch roller
M902
Capstan motor (SCE-0101A)
8-835-477-01
M903
Loading motor assembly
A-7040-304-A
M901
Drum assembly (DGH-90A-R)
A-7048-585-A
Upper drum assembly (DGR-90-R)
A-7049-521-A

— Right side —

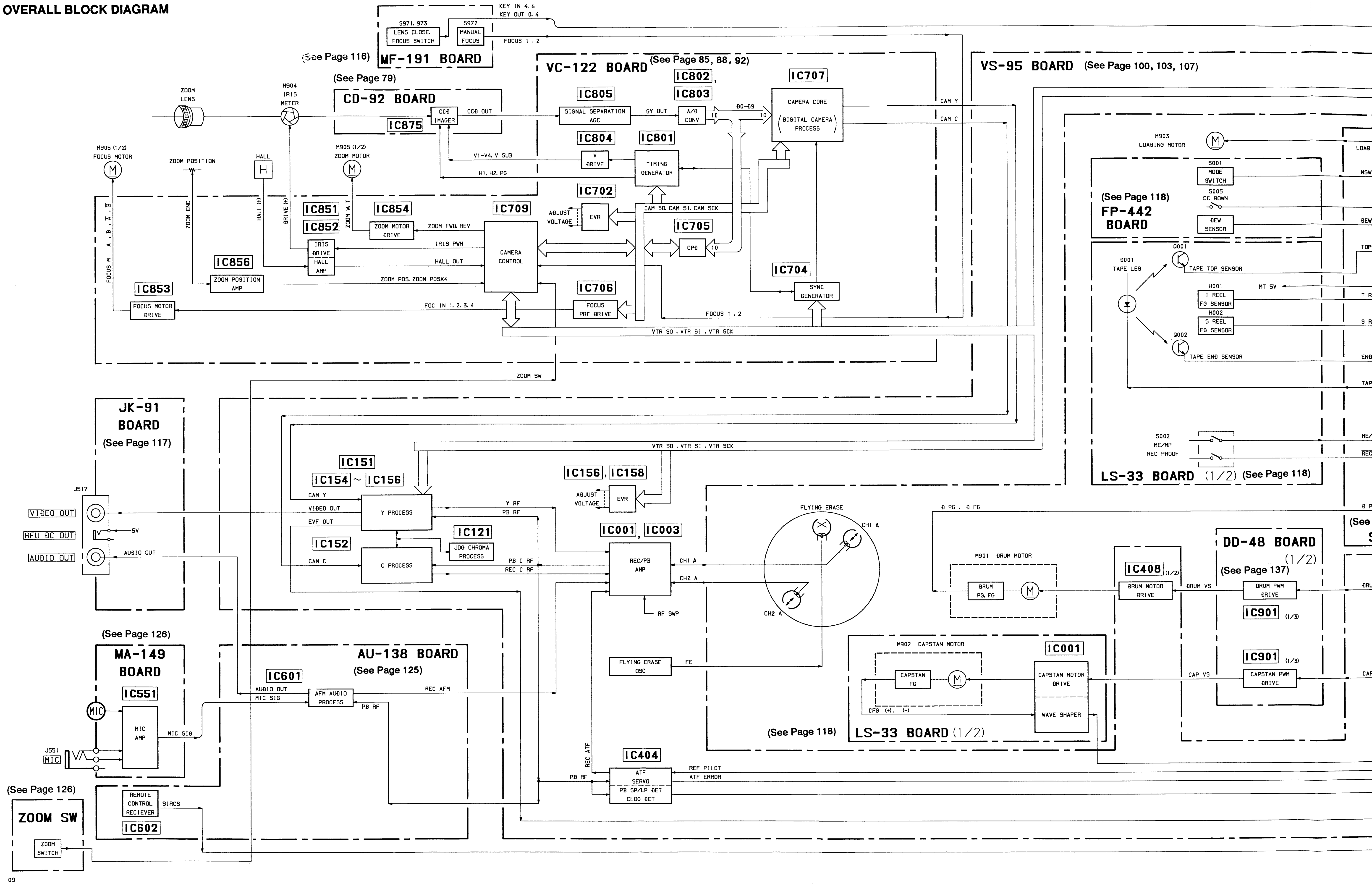

Zoom lens (VCL-6210WC)
1-547-548-11
M905
Focus motor assembly
3-708-491-01
M904
IRIS meter assembly
3-708-494-01
M906
Zoom motor assembly
3-708-492-01

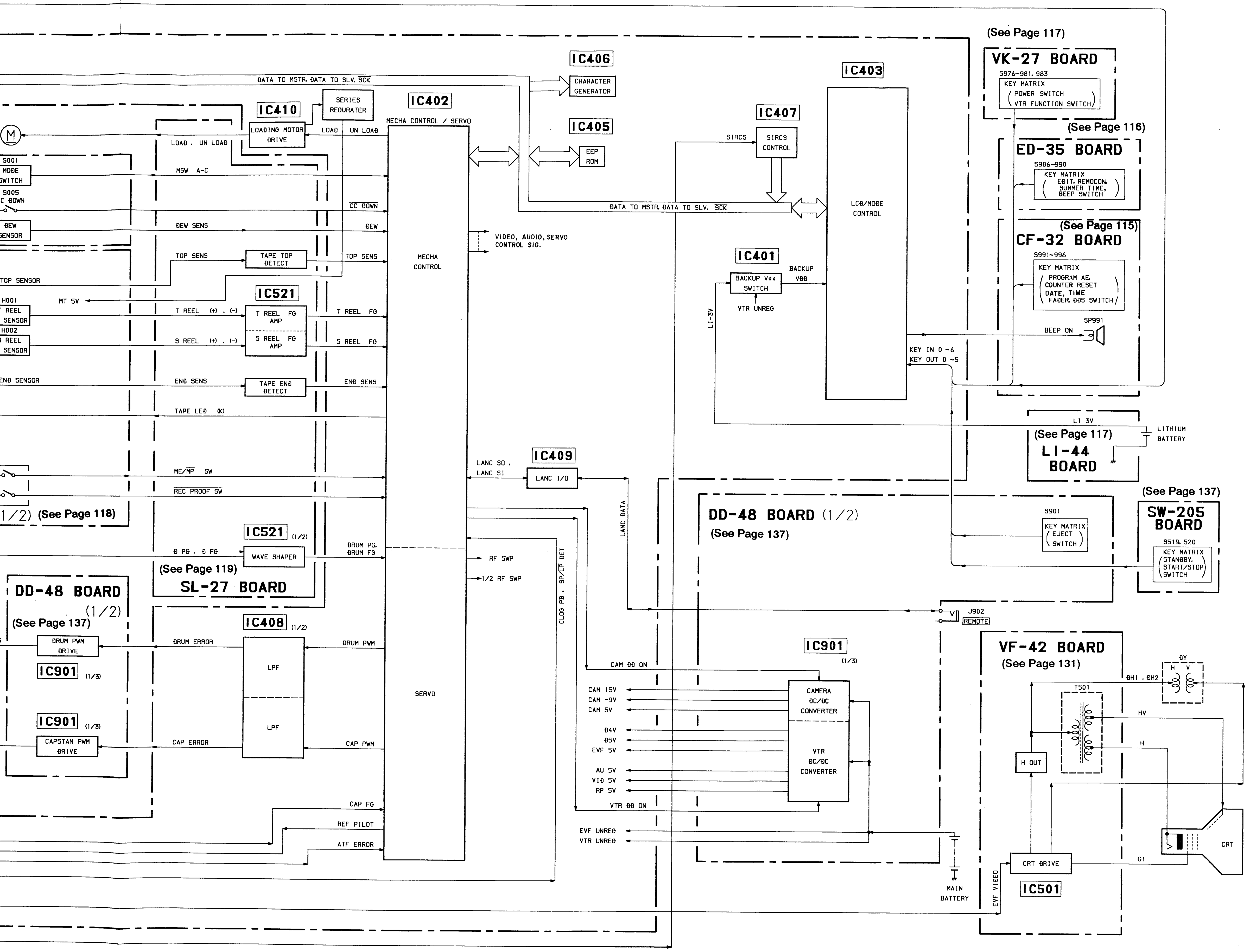
SECTION 3
DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION

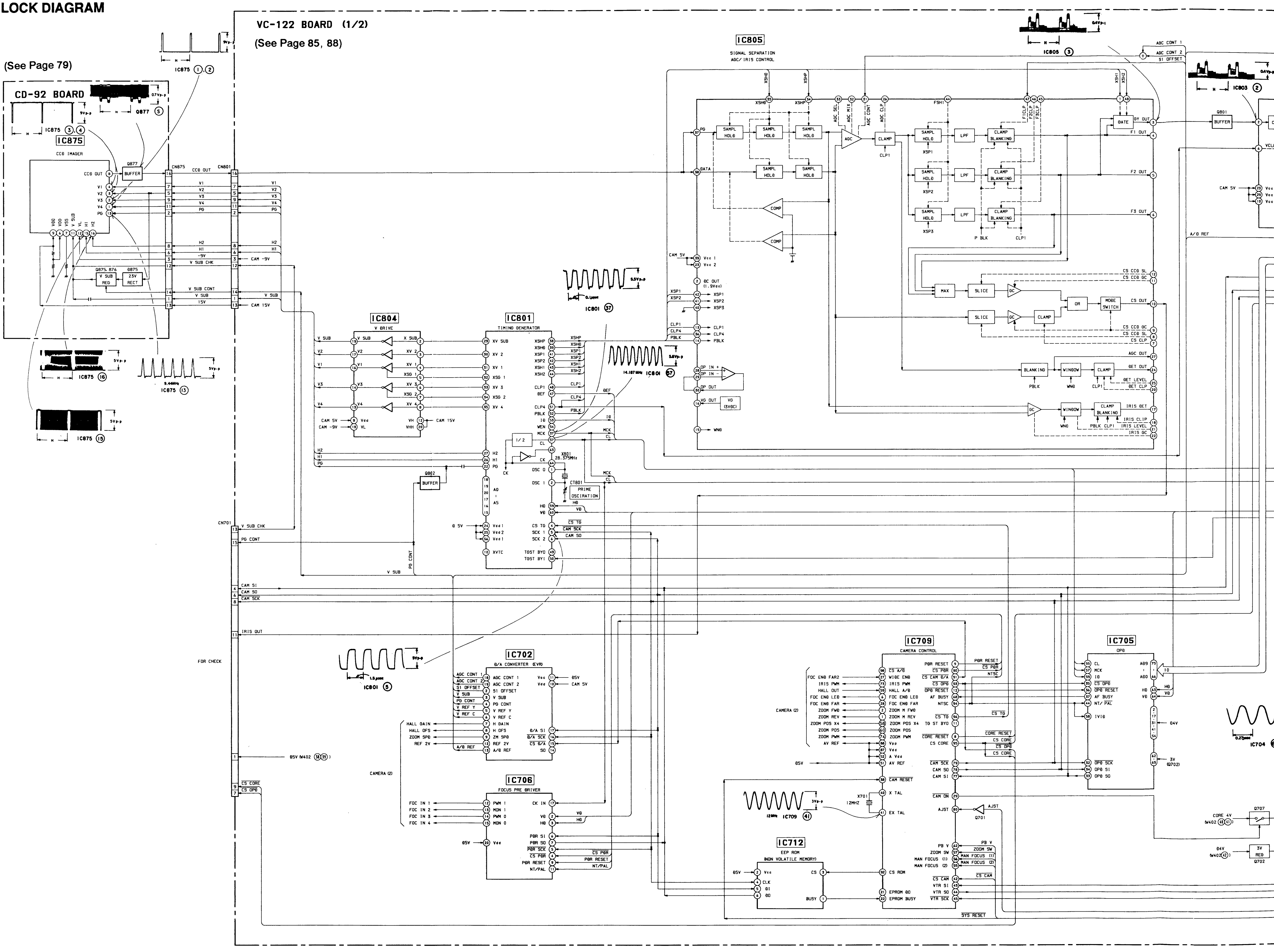

SW-205
(Camera, Function Switch)
PUSH SWITCH (ZOOM)
LS-33
(Mech Control)
VF-42
(View Finder)
VC-122
(Camera, Lens Drive)
JK-91
(Video/Audio Jack)
CD-92
(CCD Imager)
VS-95
(REC/PB Head Amplifier, Video, Servo/System Control)
DD-48
(Power)
ED-35
(Camera, Function Switch)
VK-27
(VTR Function Switch)
SL-27
(Mech Control)
MA-149
(Mic Jack, Mic Amplifier)
CF-32
(Camera, Function Switch)
AU-138
(AFM Audio)
CN-65
(Board Link)
LM-40
(Loading Motor Drive)
LI-44
(Lithium Battery Holder)
MF-191
(Manual Focus Switch)

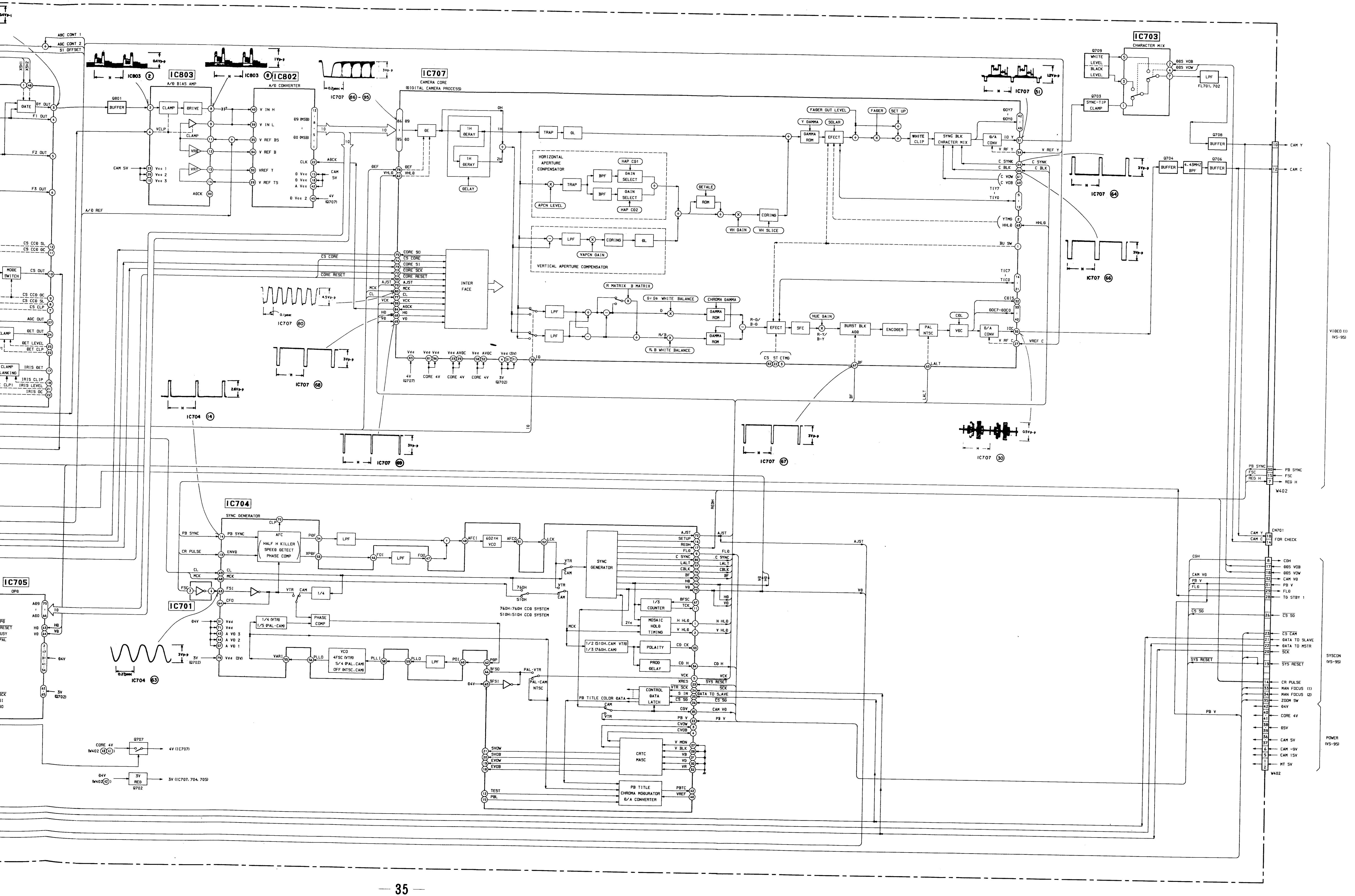
3-2. OVERALL BLOCK DIAGRAM


KEY IN 4, 6
KEY OUT 0, 4
S971, 973
LENS CLOSE, FOCUS SWITCH
S972
MANUAL FOCUS
FOCUS 1, 2
(See Page 116)
MF-191 BOARD
VC-122 BOARD
(See Page 85, 88, 92)
VS-95 BOARD
(See Page 100, 103, 107)
(See Page 79)
CD-92 BOARD
ZOOM LENS
M904 IRIS METER
CCD IMAGER
CCD OUT
IC875
IC805
SIGNAL SEPARATION AGC
GY OUT
IC802
IC803
A/D CONV
D0-D9
10
IC707
CAMERA CORE
(DIGITAL CAMERA PROCESS)
CAM Y
CAM C
M905 (1/2) FOCUS MOTOR
ZOOM POSITION
HALL
M905 (1/2) ZOOM MOTOR
IC804
V DRIVE
IC801
TIMING GENERATOR
V1-V4, V SUB
H1, H2, PG
IC702
ADJUST VOLTAGE
EVR
CAM SO, CAM SI, CAM SCK
IC705
OPD
IC704
SYNC GENERATOR
FOCUS M A, B, Ā, B̄
ZOOM ENC
HALL (+)
DRIVE (+)
ZOOM W, T
IC851
IC852
IRIS DRIVE
HALL AMP
IC854
ZOOM MOTOR DRIVE
ZOOM FWD, REV
IC709
CAMERA CONTROL
IRIS PWM
HALL OUT
IC856
ZOOM POSITION AMP
ZOOM POS, ZOOM POSX4
IC853
FOCUS MOTOR DRIVE
FOC IN 1, 2, 3, 4
IC706
FOCUS PRE DRIVE
FOCUS 1, 2
VTR SO, VTR SI, VTR SCK
ZOOM SW
M903 LOADING MOTOR
S001 MODE SWITCH
S005 CC DOWN
DEW SENSOR
(See Page 118)
FP-442 BOARD
D001 TAPE LED
Q001 TAPE TOP SENSOR
H001 T REEL FG SENSOR
H002 S REEL FG SENSOR
MT 5V
Q002 TAPE END SENSOR
S002 ME/MP REC PROOF
LS-33 BOARD (1/2) (See Page 118)
LOAD
MSW
DEW
TOP
T R
S R
END
TAP
ME/
REC
D P
(See
JK-91 BOARD
(See Page 117)
J517
VIDEO OUT
RFU DC OUT
AUDIO OUT
5V
IC151
IC154 ~ IC156
CAM Y
VIDEO OUT
EVF OUT
Y PROCESS
Y RF
PB RF
IC121
JOG CHROMA PROCESS
IC152
CAM C
C PROCESS
PB C RF
REC C RF
IC156, IC158
ADJUST VOLTAGE
EVR
IC001, IC003
REC/PB AMP
CH1 A
CH2 A
RF SWP
FLYING ERASE
CH1 A
CH2 A
D PG, D FG
M901 DRUM MOTOR
DRUM PG, FG
IC408 (1/2)
DRUM MOTOR DRIVE
DRUM VS
DD-48 BOARD (1/2)
(See Page 137)
DRUM PWM DRIVE
IC901 (1/3)
DRU
(See Page 126)
MA-149 BOARD
IC551
MIC
MIC AMP
MIC SIG
J551 MIC
AU-138 BOARD
(See Page 125)
IC601
AUDIO OUT
MIC SIG
AFM AUDIO PROCESS
REC AFM
PB RF
FLYING ERASE OSC
FE
M902 CAPSTAN MOTOR
CAPSTAN FG
CFG (+), (-)
IC001
CAPSTAN MOTOR DRIVE
WAVE SHAPER
CAP VS
IC901 (1/3)
CAPSTAN PWM DRIVE
CAP
(See Page 118)
LS-33 BOARD (1/2)
REC ATF
IC404
ATF SERVO
PB SP/LP DET
CLOG DET
REF PILOT
ATF ERROR
PB RF
(See Page 126)
REMOTE CONTROL RECIEVER
SIRCS
IC602
ZOOM SW
ZOOM SWITCH
09


IC406
CHARACTER GENERATOR
IC405
EEP ROM
IC410
LOADING MOTOR DRIVE
SERIES REGURATER
IC402
MECHA CONTROL / SERVO
MECHA CONTROL
SERVO
DATA TO MSTR, DATA TO SLV, SCK
LOAD, UN LOAD
S001 MODE SWITCH
S005 CC DOWN
DEW SENSOR
TOP SENSOR
H001 T REEL SENSOR
H002 S REEL SENSOR
END SENSOR
MT 5V
MSW A-C
CC DOWN
DEW SENS
DEW
TOP SENS
TAPE TOP DETECT
IC521
T REEL (+), (−)
T REEL FG AMP
T REEL FG
S REEL (+), (−)
S REEL FG AMP
S REEL FG
END SENS
TAPE END DETECT
TAPE LED
ME/MP SW
REC PROOF SW
(1/2) (See Page 118)
IC521 (1/2)
D PG, D FG
WAVE SHAPER
DRUM PG, DRUM FG
(See Page 119)
SL-27 BOARD
VIDEO, AUDIO, SERVO CONTROL SIG.
RF SWP
1/2 RF SWP
CLOG PB, SP/LP DET
LANC SO, LANC SI
IC409
LANC I/O
LANC DATA
DD-48 BOARD (1/2)
(See Page 137)
DRUM PWM DRIVE
IC901 (1/3)
IC901 (1/3)
CAPSTAN PWM DRIVE
IC408 (1/2)
LPF
LPF
DRUM ERROR
DRUM PWM
CAP ERROR
CAP PWM
CAP FG
REF PILOT
ATF ERROR
IC407
SIRCS
SIRCS CONTROL
IC403
LCD/MODE CONTROL
IC401
BACKUP Vdd SWITCH
BACKUP VDD
VTR UNREG
LI-3V
KEY IN 0 ~6
KEY OUT 0 ~5
(See Page 117)
VK-27 BOARD
S976~981, 983
KEY MATRIX (POWER SWITCH, VTR FUNCTION SWITCH)
(See Page 116)
ED-35 BOARD
S986~990
KEY MATRIX (EDIT, REMOCON, SUMMER TIME, BEEP SWITCH)
(See Page 115)
CF-32 BOARD
S991~996
KEY MATRIX (PROGRAM AE, COUNTER RESET, DATE, TIME, FADER, DDS SWITCH)
SP991
BEEP ON
LI 3V
LITHIUM BATTERY
(See Page 117)
LI-44 BOARD
DD-48 BOARD (1/2)
(See Page 137)
S901
KEY MATRIX (EJECT SWITCH)
(See Page 137)
SW-205 BOARD
S519, 520
KEY MATRIX (STANDBY, START/STOP SWITCH)
J902
REMOTE
IC901 (1/3)
CAM DD ON
CAM 15V
CAM −9V
CAM 5V
D4V
D5V
EVF 5V
AU 5V
VID 5V
RP 5V
VTR DD ON
EVF UNREG
VTR UNREG
CAMERA DC/DC CONVERTER
VTR DC/DC CONVERTER
MAIN BATTERY
VF-42 BOARD
(See Page 131)
DY
H V
DH1, DH2
T501
HV
H
H OUT
CRT DRIVE
IC501
G1
CRT
EVF VIDEO

3-3. CAMERA (1) BLOCK DIAGRAM


(See Page 79)
CD-92 BOARD
IC875
CCD IMAGER
CCD OUT
BUFFER
Q877
V SUB REG
23V RECT
Q875, 876
Q875
CN875
CN801
CCD OUT
V1
V2
V3
V4
PG
H2
H1
-9V
V SUB CHK
V SUB CONT
V SUB
15V
CAM -9V
CAM 15V
IC875 ①,②
IC875 ③,④
Q877 ⑤
IC875 ⑯
IC875 ⑬
IC875 ⑮
9.44MHz
VC-122 BOARD (1/2)
(See Page 85, 88)
IC805
SIGNAL SEPARATION
AGC/IRIS CONTROL
SAMPL HOLD
AGC
CLAMP
LPF
CLAMP BLANKING
COMP
GATE
MAX
SLICE
GC
OR
MODE SWITCH
BLANKING
WINDOW
CLAMP BLANKING
IC805 ③
IC803 ②
Q801
BUFFER
AGC CONT 1
AGC CONT 2
S1 OFFSET
F1 OUT
F2 OUT
F3 OUT
CS OUT
AGC OUT
DET OUT
IRIS DET
A/D REF
CAM 5V
IC804
V DRIVE
IC801
TIMING GENERATOR
IC801 ㊲
14.187MHz IC801 ㊲
X801
28.375MHz
CT801
PRIME OSCIRATION
Q802
BUFFER
CN701
V SUB CHK
PG CONT
CAM SI
CAM SO
CAM SCK
IRIS OUT
FOR CHECK
B5V (W402 ㉚㉛)
CS CORE
CS OPD
IC801 ⑤
IC702
D/A CONVERTER (EVR)
IC706
FOCUS PRE DRIVER
IC709
CAMERA CONTROL
IC712
EEP ROM
(NON VOLATILE MEMORY)
X701
12MHz
12MHz IC709 ㊶
IC705
OPD
CAMERA (2)
Q701
Q707
Q702
CORE 4V
D4V
3V REG
IC704


IC803
A/D BIAS AMP
IC802
A/D CONVERTER
IC707
CAMERA CORE
(DIGITAL CAMERA PROCESS)
IC703
CHARACTER MIX
IC704
SYNC GENERATOR
IC701
IC705
AGC CONT 1
AGC CONT 2
S1 OFFSET
Q801
BUFFER
CLAMP
DRIVE
VCLP
CAM 5V
Vcc 1
Vcc 2
Vcc 3
ADCK
V IN H
V IN L
V REF BS
V REF B
VREF T
V REF TS
CLK
D9 (MSB)
D0 (MSB)
D Vcc
A Vcc
D Vcc 2
4V (Q707)
A/D REF
IC803 (2)
IC803 (8)
IC707 (86) - (95)
IC707 (51)
1H DELAY
2H
TRAP
DL
HORIZONTAL APERTURE COMPENSATOR
BPF
HAP CG1
HAP CG2
GAIN SELECT
APCN LEVEL
VERTICAL APERTURE COMPENSATOR
LPF
CORING
VAPCN GAIN
DETALE
ROM
VH GAIN
VH SLICE
Y GAMMA
GAMMA ROM
SOLAR
EFECT
FADER OUT LEVEL
FADER
SET UP
WHITE CLIP
SYNC BLK CHARACTER MIX
D/A CONV
V REF Y
C SYNC
C BLK
C VOW
C VOB
Q709
WHITE LEVEL
BLACK LEVEL
Q703
SYNC-TIP CLAMP
DDS VOB
DDS VOW
LPF
FL701, 702
Q708
BUFFER
Q704
BUFFER
4.43MHZ BPF
Q706
BUFFER
CAM Y
CAM C
IC707 (64)
IC707 (66)
CS CORE
CORE RESET
CORE SD
CORE SI
CORE SCK
AJST
MCK
CL
VCK
ADCK
HD
VD
INTER FACE
IC707 (80)
IC707 (68)
IC707 (69)
IC704 (14)
R MATRIX B MATRIX
G-Gb WHITE BALANCE
R/B WHITE BALANCE
CHROMA GAMMA
R-G/B-G
EFECT
SFC
HUE GAIN
R-Y/B-Y
BURST BLK ADD
ENCODER
PAL NTSC
VBC
CDL
D/A CONV
V RF C
VREF C
CS ST CTMD
BF
LALT
IC707 (67)
IC707 (30)
Vdd
CORE 4V
Vdd AVDC
3V (Q702)
VIDEO (1) (VS-95)
PB SYNC
FSC
REG H
W402
CN701
FOR CHECK
PB SYNC
CR PULSE
AFC
HALF H KILLER
SPEED DETECT
PHASE COMP
ENVD
PDF
XPDF
AFCI
6021H VCO
AFCO
LCK
SYNC GENERATOR
VTR
CAM
760H
510H
760H:760H CCD SYSTEM
510H:510H CCD SYSTEM
1/4
FSI
CFO
1/4 (VTR)
1/5 (PAL-CAM)
PHASE COMP
VARI
VCO 4FSC (VTR) 5/4 (PAL.CAM) OFF (NTSC.CAM)
PLLI
PLLO
PDI
PBP
PAL-VTR
PAL-CAM
NTSC
1/3 COUNTER
MOSAIC HOLD TIMING
1/2 (510H.CAM VTR)
1/3 (760H.CAM)
POLARITY
PROG DELAY
CONTROL DATA LATCH
PB TITLE COLOR DATA
CRTC MASC
PB TITLE CHROMA MODURATOR D/A CONVERTER
AJST
SETUP
REGH
FLD
C SYNC
LALT
CBLK
BF
HD
VD
BFSC
TCK
H HLD
V HLD
CD CK
CD H
VCK
XRES
SYS RESET
VTR SCK
S IN
DATA TO SLAVE
CS SG
CGV
CAM VD
PB V
CVOW
CVOB
V MON
V BLK
VB
VD
VR
SVOW
SVOB
EVOW
EVOB
TEST
PBL
PBTC
VREF
IC704 (63)
Q707
CORE 4V (W402 (40)(41))
4V (IC707)
D4V (W402 (42))
3V REG
Q702
3V (IC707, 704, 705)
CGH
DDS VOB
DDS VOW
CAM VD
PB V
FLD
TG STBY 1
CS SG
CS CAM
DATA TO SLAVE
DATA TO MSTR
SCK
SYS RESET
SYSCON (VS-95)
CR PULSE
MAN FOCUS (1)
MAN FOCUS (2)
ZOOM SW
D4V
CORE 4V
D5V
CAM 5V
CAM -9V
CAM 15V
MT 5V
POWER (VS-95)
W402
OPB
ADD
HD
VD
D4V
3V (Q702)
MODE SWITCH
CS CCD SL
CS CCD DC
CS OUT
CS CLP
AGC OUT
DET OUT
DET LEVEL
DET CLP
IRIS DET
IRIS CLIP
IRIS LEVEL
IRIS DC
F1 OUT
F2 OUT
F3 OUT
GATE
DY OUT
XSH1
XSH2

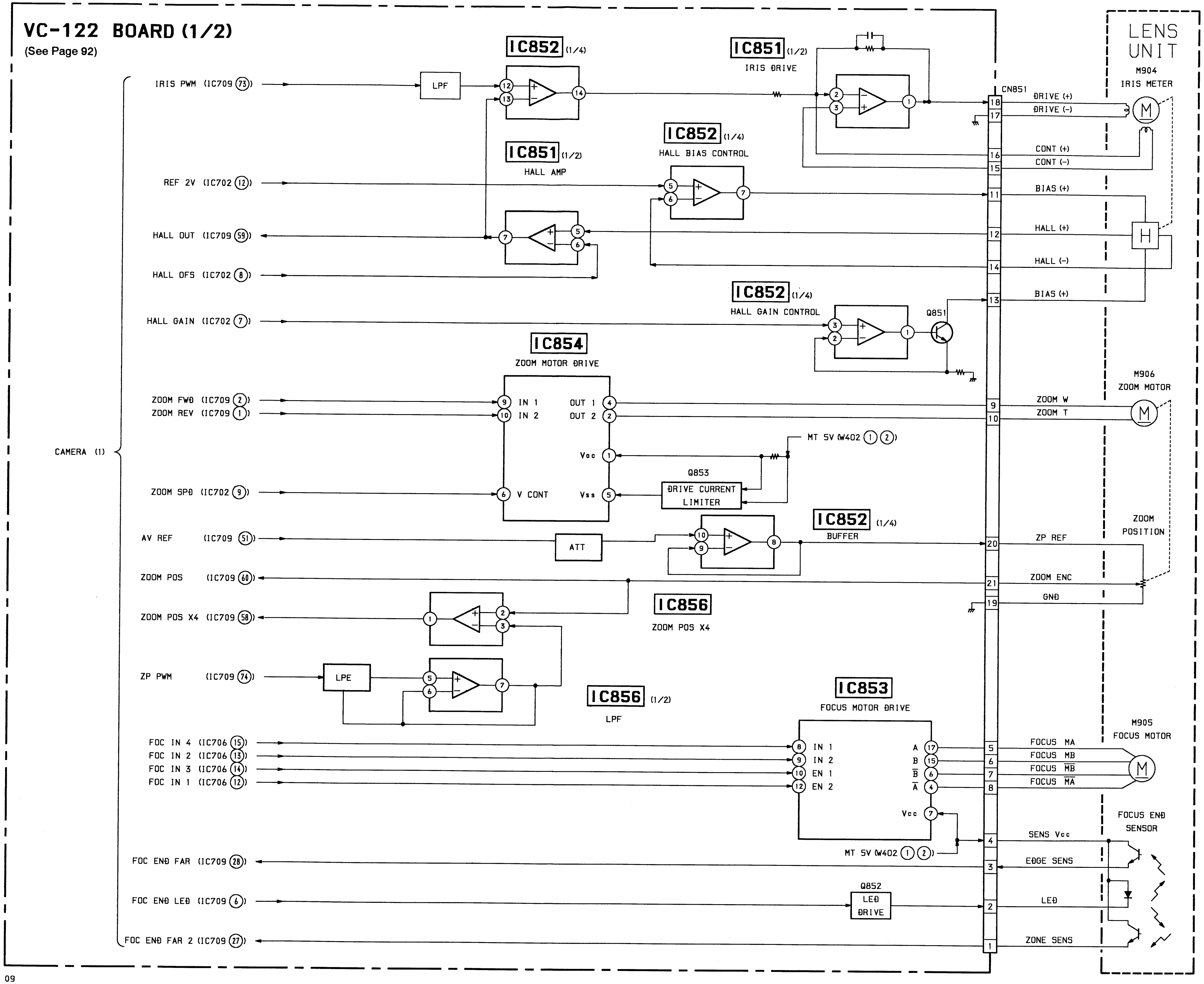
3-4. CAMERA MICROPROCESSOR PIN FUNCTION (IC709 ON VC-122 BOARD: CXP80624-424R/434R)

Pin No.	Signal	I/O	Function
1	ZOOM M REV	O	Zoom motor control signal. Normally "L". 20 msec period PWM signal when rotating to WIDE. "H" when rotating to TELE.
2	ZOOM M FWD	O	Zoom motor control signal. Normally "L". 20 msec period PWM signal when rotating to TELE. "H" when rotating to WIDE.
3			Not used.
4			
5			
6	FOC END LED	O	Focus end sensor LED control signal. Normally "L".
7	RT05/D5		Not used.
8	CORE RESET	O	Camera core (IC707 on VC-122 board) reset signal. Normally "H". "L" when reset.
9	PDR RESET	O	Focus predriver (IC706 on VC-122 board) reset signal. Normally "H". "L" when reset.
10			Not used.
11	TG STBY0		
12	OPD RESET	O	OPD (IC705 on VC-122 board) reset signal. "H": camera mode. "L": VTR mode.
13			Not used.
14			
15			
16			
17			
18			
19			
20			
21	EPROM DO	O	Connected to +5V.
22	EPROM BUSY	I	BUSY signal from EEPROM. Normally "H". "L" pulse when data reading/writing.
23			Not used.
24			
25			Connected to GND.
26			Connected to +5V.
27	WIDE END		Focus Zone sensor input. Normally "L".
28	FOC END FAR	I	Focus edge sensor input. Normally "L".
29	CAM ON	O	Power supply control signal. Normally "L".
30			Not used.
31			
32			
33			
34			
35			
36			
37	MP		Connected to GND.
38	CAM RESET	I	Reset signal input. Normally "H". "L" when reset.
39	VSS		GND
40	XTAL	O	12 MHz clock oscillation circuit.
41	EXTAL	I	
42	CS CAM	I	Chip select signal from mode control microprocessor. (IC403 on VS-95 board)
43	VTR SI	I	Serial data input from mode control microprocessor.
44	VTR SO	O	Serial data output from mode control microprocessor.
45	VTR SCK	I	Serial data transfer clock.
46			Not used.
47			
48			
49			Not used.
50	AVSS		GND
51	AVREF		Analog input port reference voltage (5V).
52	AVDD		Analog input port voltage (5V).
53			Connected to GND.
54			
55	MAN FOCUS (2)	I	Manual focus input. 0 to 5 Vdc.
56	MAN FOCUS (1)	I	Manual focus input. 0 to 5 Vdc.
57	ZOOM SW	I	Zoom key input. 0.4V: F. TELE, 1.4V: TELE and 3.7V: F. WIDE, 2.5V: WIDE and 5V: no input.
58	ZOOM POS X4	I	Zoom position voltage. approx. 0.4V (WIDE end) to approx. 2.8V (TELE end).
59	HALL A/D	I	Hall voltage. approx. 1V (iris open) to approx. 3V (iris close).
60	ZOOM POS	I	Zoom position voltage. approx. 0.2V (WIDE end) to approx. 2.4V (TELE end).
61			Connected to 5V.
62	PB V	I	VD signal input from mecha controler (IC402 on VS-95 board).
63	PG5/SYNC1		Connected to +5V.
64	VTR SYNC		
65	PB CTL		
66	DPG		
67			
68	AF BUSY	I	AF busy signal.
69			Not used.
70			
71			
72			
73	IRIS PWM	O	Iris control signal. 21 μsec period PWM signal.
74	ZM PWM	O	Zoom position detection voltage output. 21 μsec period PWM signal.
75			Not used.
76			Connected to +5V.
77	CAM SI	I	Serial data input.
78	CAM SO	O	Serial data output.
79	CAM SCK	O	Serial data transfer clock.
80	AJST	I	Adjustment timing pulse input. Normally "H".
81	PI/TO		Not used.
82	PI/PWM		
83	PI/PO		
84	PI O		Connected to +5V.
85	PKO		
86	GND		GND
87	VDD		+5V power supply.
88	VPP		
89			Not used.
90	CS PDR	O	Chip select signal to focus predriver (IC706 on VC-122 board).
91	CS CAM D/A	O	Chip select signal to camera EVR (IC702 on VC-122 board).
92	CS ROM	O	Chip select signal to EEPROM (IC712 on VC-122 board).
93	CS OPD	O	Chip select signal to OPD (IC705 on VC-122 board).
94	NTSC	O	NTSC: "L", PAL: "H".
95	CS CORE	O	Chip select signal to camera core (IC707 on VC-122 board).
96	CS TG	O	Chip select signal to timing generator (IC801 on VC-122 board).
97			Not used.
98	CS A/D	O	Chip select signal to Zoom position A/D converter. Not used.
99			Not used.
100			

nd 5V: no input.

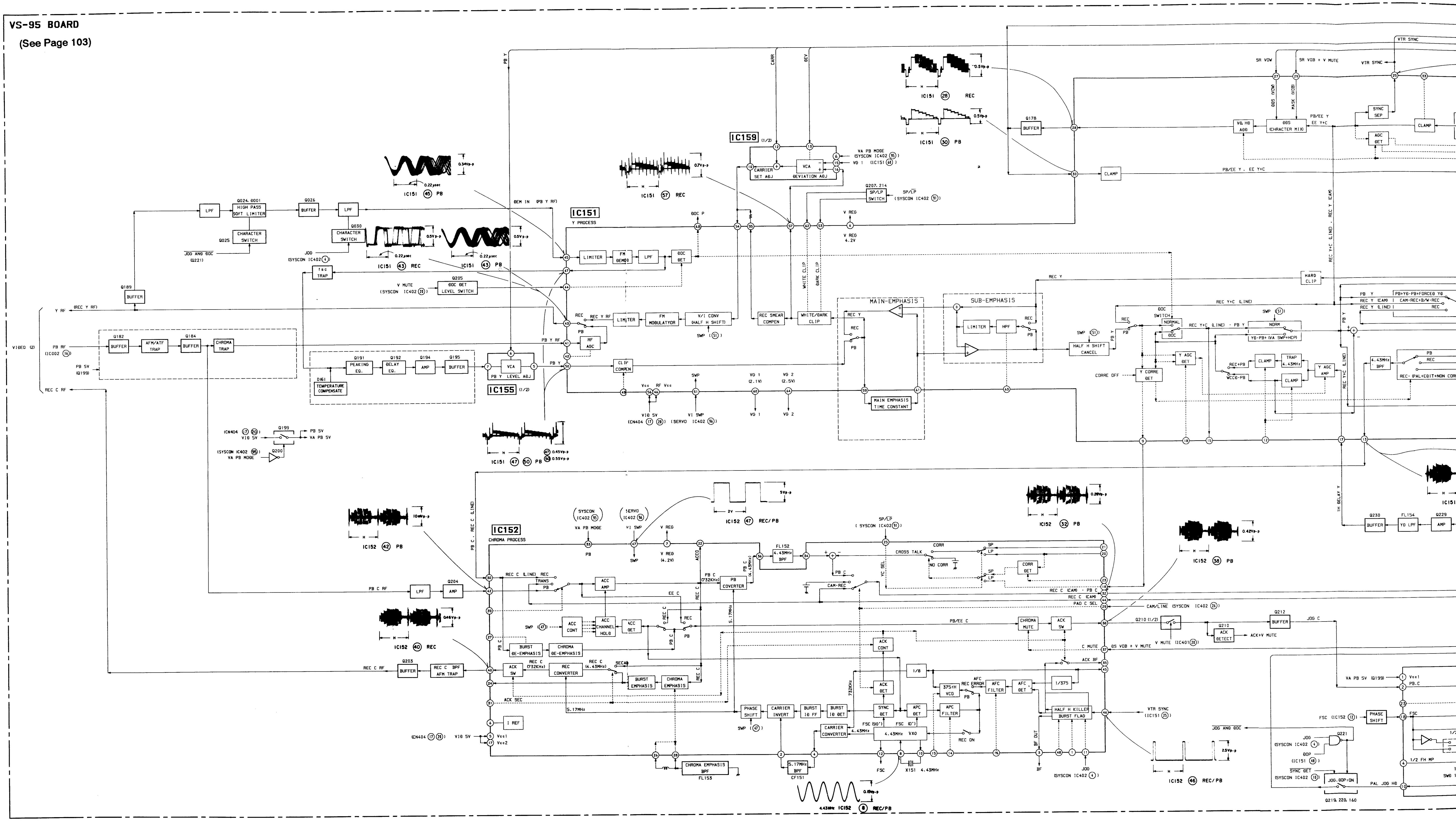
3-5. CAMERA (2) BLOCK DIAGRAM

(See Page 94)

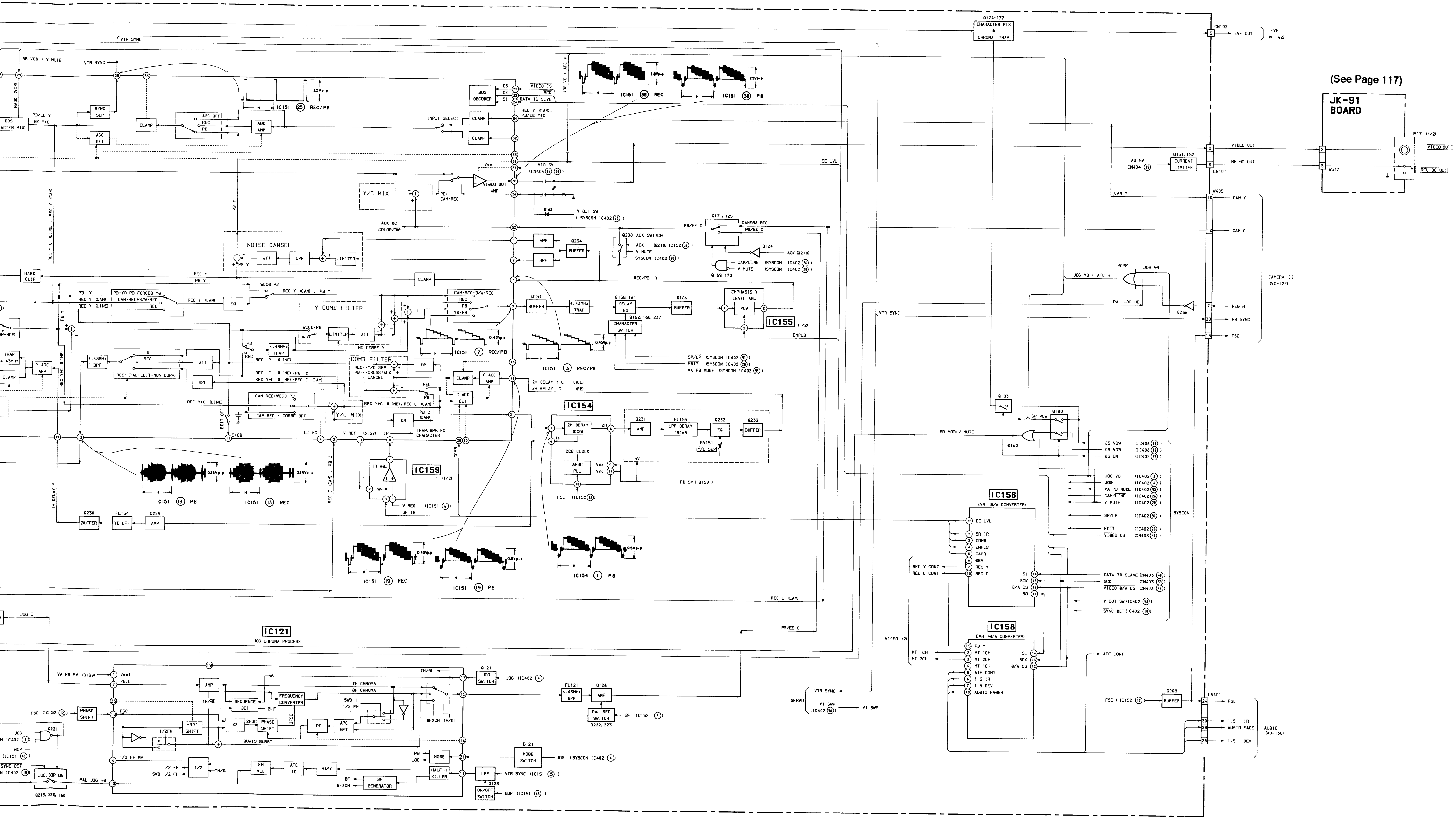

VC-122 BOARD (1/2)
(See Page 92)
CAMERA (1)
IRIS PWM (IC709 (73))
REF 2V (IC702 (12))
HALL OUT (IC709 (59))
HALL OFS (IC702 (8))
HALL GAIN (IC702 (7))
ZOOM FWD (IC709 (2))
ZOOM REV (IC709 (1))
ZOOM SPD (IC702 (9))
AV REF (IC709 (51))
ZOOM POS (IC709 (60))
ZOOM POS X4 (IC709 (58))
ZP PWM (IC709 (74))
FOC IN 4 (IC706 (15))
FOC IN 2 (IC706 (13))
FOC IN 3 (IC706 (14))
FOC IN 1 (IC706 (12))
FOC END FAR (IC709 (28))
FOC END LED (IC709 (6))
FOC END FAR 2 (IC709 (27))
LPF
IC852 (1/4)
IC851 (1/2)
IRIS DRIVE
IC851 (1/2)
HALL AMP
IC852 (1/4)
HALL BIAS CONTROL
IC852 (1/4)
HALL GAIN CONTROL
Q851
IC854
ZOOM MOTOR DRIVE
IN 1
IN 2
OUT 1
OUT 2
Vcc
V CONT
Vss
MT 5V (W402 (1)(2))
Q853
DRIVE CURRENT LIMITER
IC852 (1/4)
BUFFER
ATT
IC856
ZOOM POS X4
LPE
IC856 (1/2)
LPF
IC853
FOCUS MOTOR DRIVE
IN 1
IN 2
EN 1
EN 2
A
B
B̄
Ā
Vcc
MT 5V (W402 (1)(2))
Q852
LED DRIVE
CN851
DRIVE (+)
DRIVE (−)
CONT (+)
CONT (−)
BIAS (+)
HALL (+)
HALL (−)
BIAS (+)
ZOOM W
ZOOM T
ZP REF
ZOOM ENC
GND
FOCUS MA
FOCUS MB
FOCUS M̄B̄
FOCUS M̄Ā
SENS Vcc
EDGE SENS
LED
ZONE SENS
LENS UNIT
M904
IRIS METER
M
H
M906
ZOOM MOTOR
M
ZOOM POSITION
M905
FOCUS MOTOR
M
FOCUS END SENSOR

09

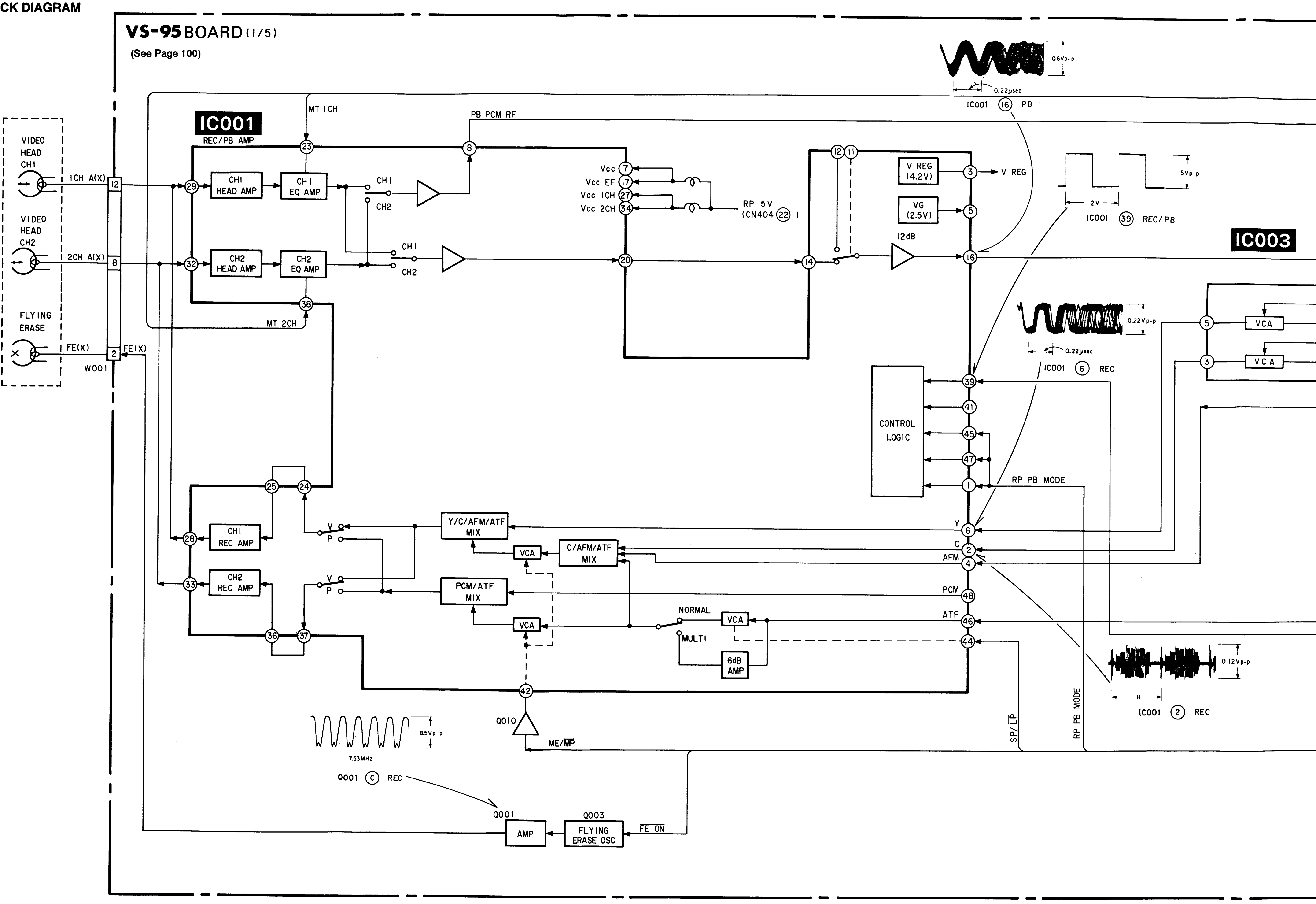
3-6. VIDEO (1) BLOCK DIAGRAM

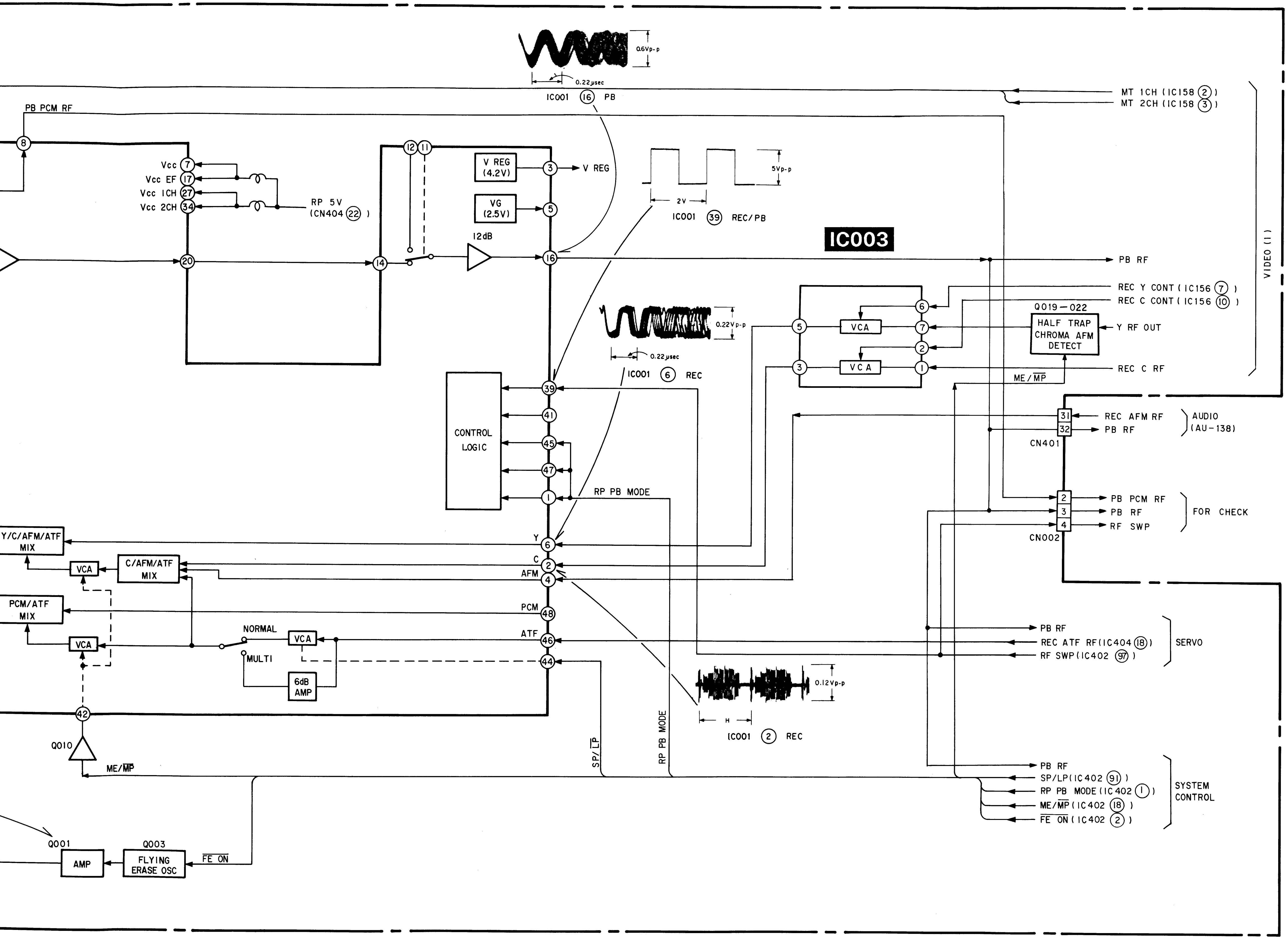

VS-95 BOARD
(See Page 103)
IC151
Y PROCESS
IC152
CHROMA PROCESS
IC155 (1/2)
IC159 (1/2)
MAIN-EMPHASIS
SUB-EMPHASIS
LPF
Q024, Q001 HIGH PASS SOFT LIMITER
Q026 BUFFER
Q030 CHARACTER SWITCH
Q025 CHARACTER SWITCH
JOG AND OOC (Q221)
Q189 BUFFER
Q182 BUFFER
AFM/ATF TRAP
Q184 BUFFER
CHROMA TRAP
VIDEO (2)
PB RF (IC002 (14))
PB 5V (Q199)
Y RF (REC Y RF)
REC C RF
fsc TRAP
Q205 OOC DET LEVEL SWITCH
V MUTE (SYSCON IC402 (29))
Q191 PEAKING EQ.
Q192 DELAY EQ.
Q194 AMP
Q195 BUFFER
D161 TEMPERATURE COMPENSATE
VCA
PB Y LEVEL ADJ
LIMITER
FM DEMOD
OOC DET
FM MODULATOR
V/I CONV (HALF H SHIFT)
REC SMEAR COMPEN
WHITE/DARK CLIP
CLIP COMPEN
RF AGC
CARRIER SET ADJ
DEVIATION ADJ
VA PB MODE (SYSCON IC402 (55))
Q207, 214 SP/LP SWITCH
SP/LP (SYSCON IC402 (51))
V REG 4.2V
MAIN EMPHASIS TIME CONSTANT
HPF
HALF H SHIFT CANCEL
Q178 BUFFER
VG HD ADD
OOS (CHRACTER MIX)
SYNC SEP
AGC DET
CLAMP
HARD CLIP
Y CORRE DET
Y AGC DET
TRAP 4.43MHz
Y AGC AMP
4.43MHz BPF
Q230 BUFFER
FL154 YO LPF
Q229 AMP
IC151 (45) PB
IC151 (57) REC
IC151 (43) REC
IC151 (43) PB
IC151 (47) (50) PB
IC151 (28) REC
IC151 (30) PB
IC152 (42) PB
IC152 (40) REC
IC152 (47) REC/PB
IC152 (32) PB
IC152 (38) PB
IC152 (46) REC/PB
4.43MHz IC152 (8) REC/PB
Q204 AMP
ACC AMP
PB COVERTER
ACC CONT
ACC CHANNEL HOLD
KCC DET
BURST DE-EMPHASIS
CHROMA DE-EMPHASIS
Q203 BUFFER
REC C BPF AFM TRAP
ACK SW
REC CONVERTER
BURST EMPHASIS
CHROMA EMPHASIS
I REF
CHROMA EMPHASIS BPF FL153
5.17MHz BPF CF151
FL152 4.43MHz BPF
CROSS TALK
CORR DET
PHASE SHIFT
CARRIER INVERT
BURST 1D FF
BURST ID DET
CARRIER CONVERTER
SYNC DET
APC DET
APC FILTER
ACK DET
ACK CONT
375fH VCO
AFC FILTER
AFC DET
1/375
1/8
4.43MHz VXO
X151 4.43MHz
HALF H KILLER BURST FLAG
CHROMA MUTE
ACK SW
Q210 (1/2)
Q210 ACK DETECT
Q212 BUFFER
JOG (SYSCON IC402 (4))
Q221
JOG.OOP:ON
Q219, 220, 160
PHASE SHIFT
VTR SYNC (IC151 (25))

09

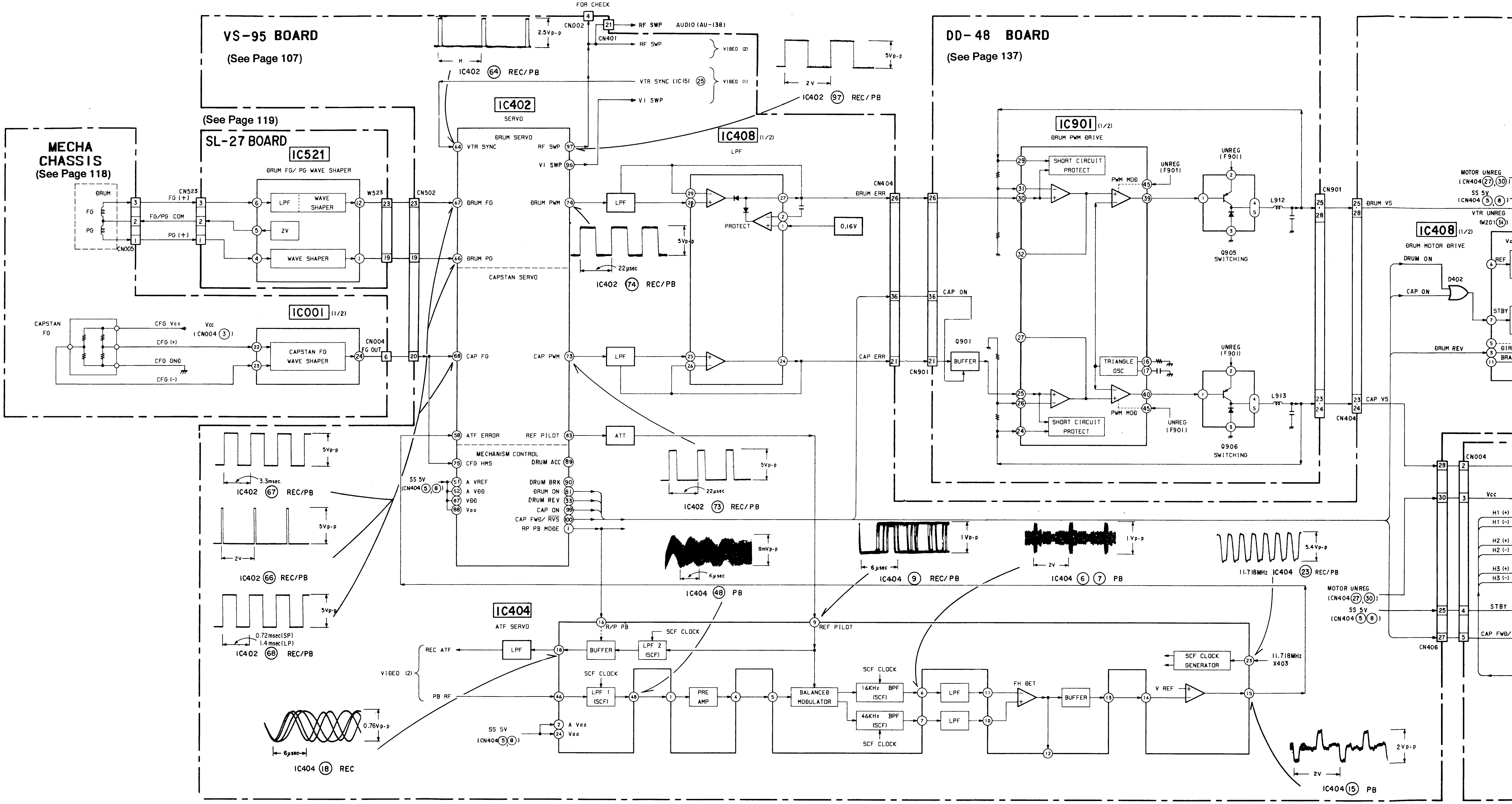

(See Page 117)
JK-91 BOARD
J517 (1/2)
VIDEO OUT
RFU DC OUT
W517
CN102
EVF OUT
EVF (VF-42)
Q174-177 CHARACTER MIX & CHROMA TRAP
CN101
VIDEO OUT
RF DC OUT
Q151, 152 CURRENT LIMITER
AU 5V CN404 (19)
W405
CAM Y
CAM C
REG H
PB SYNC
FSC
CAMERA (1) (VC-122)
VTR SYNC
SR VDB + V MUTE
SYNC SEP
AGC DET
CLAMP
AGC OFF
REC
PB
AGC AMP
IC151 (25) REC/PB
2.5Vp-p
BUS DECODER
VIDEO CS
SCK
DATA TO SLVE
INPUT SELECT
REC Y (CAM), PB/EE Y+C
JOG VD + AFC H
IC151 (38) REC
IC151 (38) PB
1.8Vp-p
2.3Vp-p
EE LVL
VIDEO OUT AMP
Vcc
VID 5V (CN404 (17)(28))
Y/C MIX
PB+ CAM·REC
D162
V OUT SW (SYSCON IC402 (55))
ACK DC (COLOR/BW)
NOISE CANSEL
ATT
LPF
LIMITER
HPF
Q234 BUFFER
Q208 ACK SWITCH
ACK (Q210, IC152 (38))
V MUTE (SYSCON IC402 (28))
Q171, 125
CAMERA REC
PB/EE C
Q124
ACK (Q210)
CAM/LINE (SYSCON IC402 (26))
V MUTE (SYSCON IC402 (28))
Q169, 170
REC/PB Y
HARD CLIP
REC Y
PB Y
WCCD PB
REC Y (CAM), PB Y
PB+YD·PB+FORCED YD
CAM·REC+B/W·REC
REC Y (CAM)
REC Y (LINE)
EQ
Y COMB FILTER
WCCD·PB
ATT
CAM·REC+B/W·REC
YD·PB
Q154 BUFFER
4.43MHz TRAP
Q158, 161 DELAY EQ
Q162, 168, 237 CHARACTER SWITCH
Q166 BUFFER
EMPHASIS Y LEVEL ADJ
VCA
IC155 (1/2)
EMPLB
SP/LP (SYSCON IC402 (51))
EDIT (SYSCON IC402 (28))
VA PB MODE (SYSCON IC402 (95))
IC151 (7) REC/PB
0.42Vp-p
IC151 (3) REC/PB
0.45Vp-p
4.43MHz TRAP
NO CORRE Y
4.43MHz BPF
REC·(PAL+EDIT+NON CORR)
COMB FILTER
REC···Y/C SEP
PB···CROSSTALK CANCEL
DM
CLAMP
C ACC AMP
C ACC DET
REC C (LINE)·PB C
REC Y+C (LINE)·REC C (CAM)
CAM REC+WCCD PB
CAM REC·CORRE OFF
REC Y+C (LINE)
REC Y+C (LINE), REC C (CAM)
PB C (CAM)
2H DELAY Y+C (REC)
2H DELAY C (PB)
IC154
2H DELAY (CCD)
CCD CLOCK
3FSC PLL
FSC (IC152 (12))
Q231 AMP
FL155 LPF DELAY 180nS
Q232 EQ
Q233 BUFFER
RV151 Y/C SEP
PB 5V (Q199)
TRAP, BPF, EQ CHARACTER
V REF (3.5V)
IR ADJ
IC159 (1/2)
V REG (IC151 (6))
SR IR
EDIT OFF
C+CD
LI MC
IC151 (13) PB
0.26Vp-p
IC151 (13) REC
0.15Vp-p
1H DELAY Y
Q230 BUFFER
FL154 YD LPF
Q229 AMP
REC C (CAM)
IC151 (19) REC
0.45Vp-p
IC151 (19) PB
0.6Vp-p
IC154 (1) PB
0.5Vp-p
Q183
SR VDW
Q180
Q160
D159
JOG VD + AFC H
JOG VD
PAL JOG HD
Q236
DS VDW (IC406 (11))
DS VDB (IC406 (12))
DS ON (IC402 (27))
JOG VD (IC402 (3))
JOG (IC402 (4))
VA PB MODE (IC402 (95))
CAM/LINE (IC402 (26))
V MUTE (IC402 (28))
SP/LP (IC402 (51))
EDIT (IC402 (28))
VIDEO CS (CN403 (58))
SYSCON
IC156 EVR (D/A CONVERTER)
EE LVL
SR IR
COMB
EMPLB
CARR
DEV
REC Y
REC C
REC Y CONT
REC C CONT
SI
SCK
D/A CS
SO
DATA TO SLAVE (CN403 (48))
SCK (CN403 (39))
VIDEO D/A CS (CN403 (48))
V OUT SW (IC402 (55))
SYNC DET (IC402 (10))
IC158 EVR (D/A CONVERTER)
PB Y
MT 1CH
MT 2CH
MT 'CH
ATF CONT
1.5 IR
1.5 DEV
AUDIO FADER
VIDEO (2)
ATF CONT
SERVO
VTR SYNC
V1 SWP (IC402 (56))
FSC (IC152 (12))
Q008 BUFFER
CN401
1.5 IR
AUDIO FADE
1.5 DEV
AUDIO (AU-138)
PB/EE C
IC121
JOG CHROMA PROCESS
JOG C
VA PB 5V (Q199)
Vcc1
PB.C
AMP
TH/BL
SEQUENCE DET
FREQUENCY CONVERTER
TH CHROMA
BH CHROMA
SWB 1
1/2 FH
FSC (IC152 (12))
PHASE SHIFT
-90° SHIFT
X2
2FSC
PHASE SHIFT
LPF
APC DET
1/2FH
QUAIS BURST
BFXCH TH/BL
Q121 JOG SWITCH
JOG (IC402 (4))
FL121 4.43MHz BPF
Q126 AMP
PAL SEC SWITCH Q222, 223
BF (IC152 (3))
1/2 FH MP
1/2 FH
SWB 1/2 FH
1/2
TH/BL
FH VCO
AFC ID
MASK
MODE
PB
JOG
HALF H KILLER
BF
BFXCH
BF GENERATOR
Q121 MODE SWITCH
JOG (SYSCON IC402 (4))
LPF
VTR SYNC (IC151 (25))
Q123 ON/OFF SWITCH
DOP (IC151 (40))
PAL JOG HD
Q221
JOG
DOP
SYNC DET
JOG.DOP ON
Q219, 220, 160

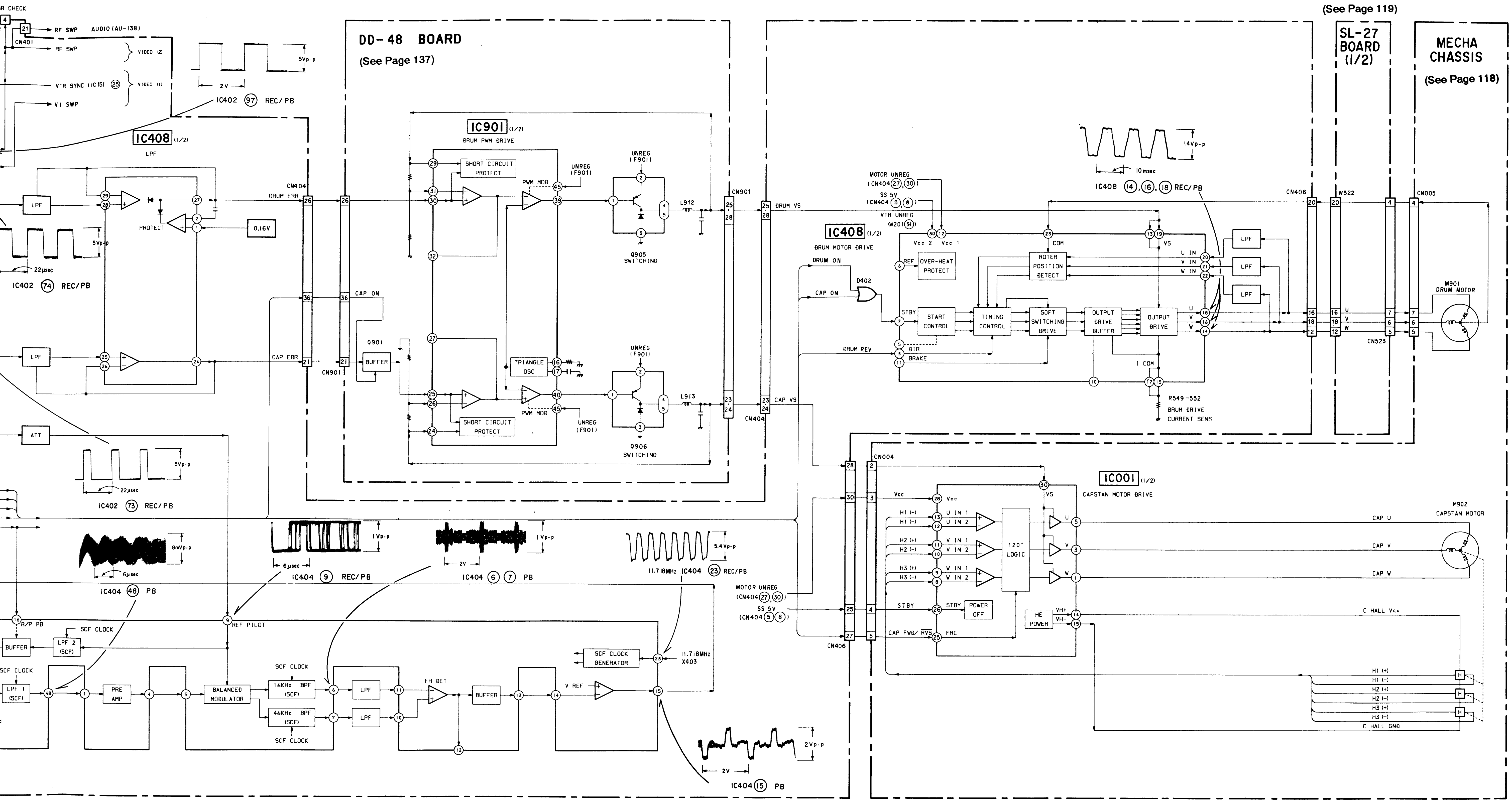
3-7. VIDEO (2) BLOCK DIAGRAM


VS-95 BOARD (1/5)
(See Page 100)
VIDEO HEAD CH1
VIDEO HEAD CH2
FLYING ERASE
1CH A(X)
2CH A(X)
FE(X)
W001
IC001
REC/PB AMP
MT 1CH
MT 2CH
PB PCM RF
CH1 HEAD AMP
CH1 EQ AMP
CH2 HEAD AMP
CH2 EQ AMP
CH1
CH2
Vcc
Vcc EF
Vcc 1CH
Vcc 2CH
RP 5V
(CN404 ㉒)
V REG (4.2V)
VG (2.5V)
V REG
12dB
CONTROL LOGIC
RP PB MODE
CH1 REC AMP
CH2 REC AMP
V
P
Y/C/AFM/ATF MIX
C/AFM/ATF MIX
PCM/ATF MIX
VCA
NORMAL
MULTI
6dB AMP
Y
C
AFM
PCM
ATF
Q010
ME/MP
SP/LP
RP PB MODE
Q001
Q003
AMP
FLYING ERASE OSC
FE ON
0.6Vp-p
0.22μsec
IC001 ⑯ PB
5Vp-p
2V
IC001 ㊴ REC/PB
IC003
0.22Vp-p
0.22μsec
IC001 ⑥ REC
0.12Vp-p
H
IC001 ② REC
8.5Vp-p
7.53MHz
Q001 Ⓒ REC

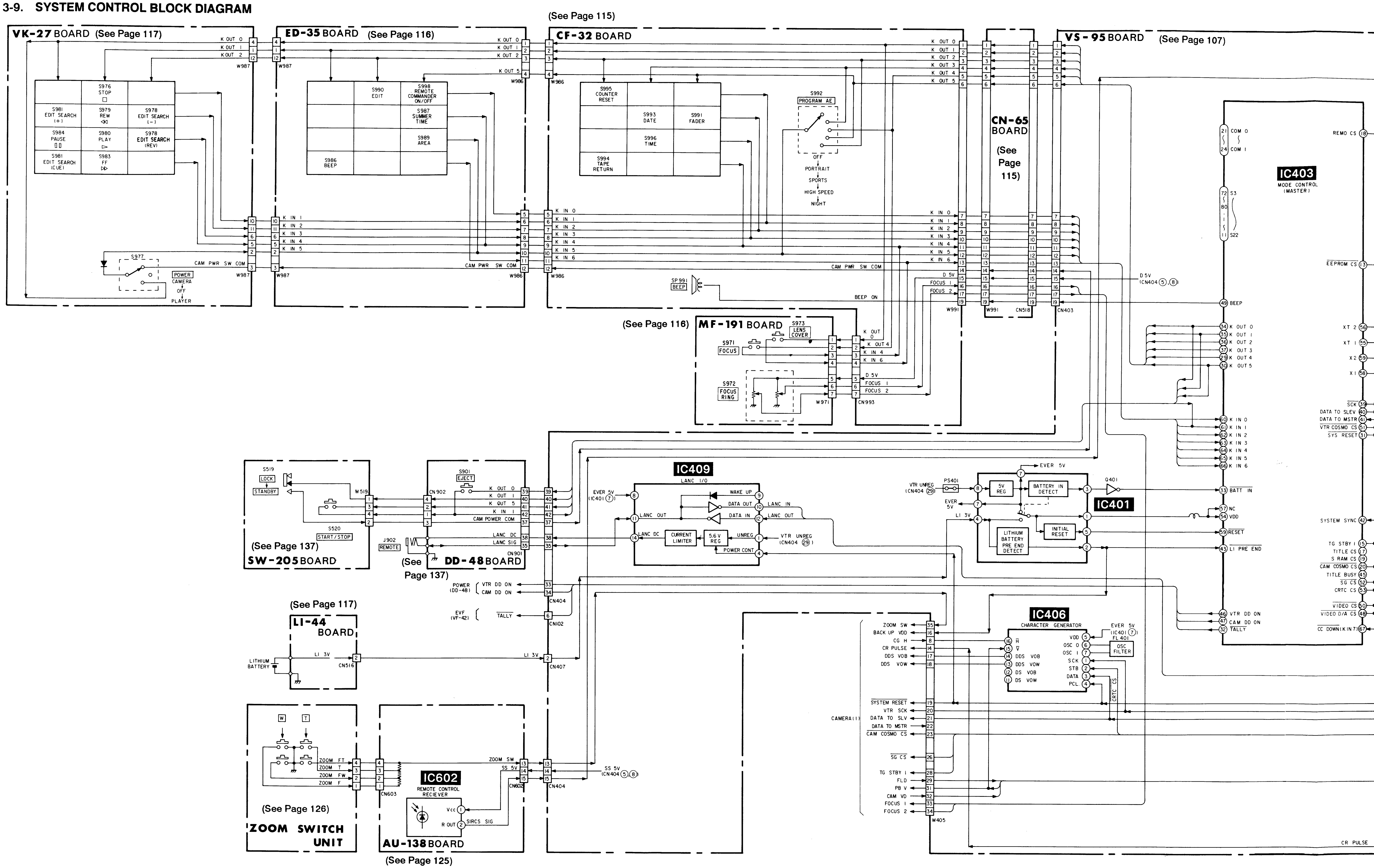

0.6Vp-p
0.22μsec
IC001 ⑯ PB
MT 1CH (IC158 ②)
MT 2CH (IC158 ③)
PB PCM RF
⑧
Vcc ⑦
Vcc EF ⑰
Vcc 1CH ㉗
Vcc 2CH ㉞
RP 5V
(CN404 ㉒)
⑫ ⑪
V REG (4.2V)
VG (2.5V)
③ V REG
⑤
5Vp-p
2V
IC001 ㊴ REC/PB
12dB
⑳
⑭
⑯
IC003
PB RF
REC Y CONT (IC156 ⑦)
REC C CONT (IC156 ⑩)
Q019 — 022
HALF TRAP CHROMA AFM DETECT
Y RF OUT
REC C RF
ME/MP
VIDEO (1)
0.22Vp-p
0.22μsec
IC001 ⑥ REC
⑤ VCA ⑦
③ VCA ①
⑥
②
CONTROL LOGIC
㊴
㊶
㊺
㊼
①
RP PB MODE
31
32
REC AFM RF
PB RF
AUDIO (AU-138)
CN401
2
3
4
PB PCM RF
PB RF
RF SWP
FOR CHECK
CN002
Y/C/AFM/ATF MIX
Y ⑥
C ②
AFM ④
VCA
C/AFM/ATF MIX
PCM/ATF MIX
PCM ㊽
ATF ㊻
㊹
VCA
NORMAL
MULTI
VCA
6dB AMP
0.12Vp-p
H
IC001 ② REC
PB RF
REC ATF RF (IC404 ⑱)
RF SWP (IC402 (97))
SERVO
㊷
Q010
ME/MP
SP/LP
RP PB MODE
PB RF
SP/LP (IC402 (91))
RP PB MODE (IC402 ①)
ME/MP (IC402 ⑱)
FE ON (IC402 ②)
SYSTEM CONTROL
Q001
AMP
Q003
FLYING ERASE OSC
FE ON

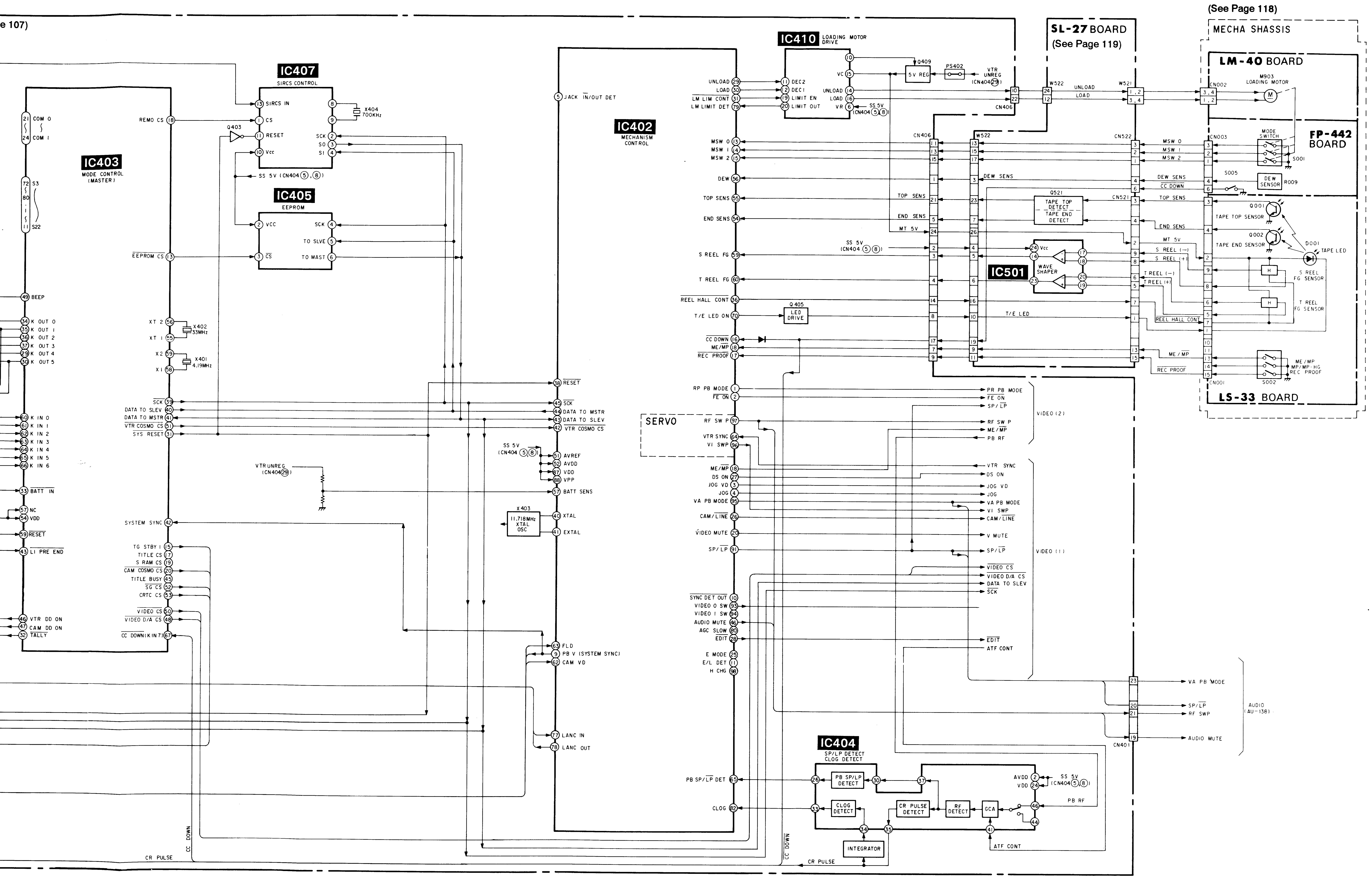
3-8. SERVO BLOCK DIAGRAM


VS-95 BOARD
(See Page 107)
MECHA CHASSIS
(See Page 118)
(See Page 119)
SL-27 BOARD
IC521
DRUM FG/ PG WAVE SHAPER
IC001 (1/2)
CAPSTAN FG WAVE SHAPER
IC402
SERVO
DRUM SERVO
CAPSTAN SERVO
MECHANISM CONTROL
IC408 (1/2)
LPF
PROTECT
0.16V
DD-48 BOARD
(See Page 137)
IC901 (1/2)
DRUM PWM DRIVE
SHORT CIRCUIT PROTECT
PWM MOD
TRIANGLE OSC
UNREG (F901)
Q905 SWITCHING
Q906 SWITCHING
Q901 BUFFER
L912
L913
CN901
CN404
CN502
CN523
W523
CN005
CN004
CN401
CN002
FOR CHECK
RF SWP
AUDIO (AU-138)
VIDEO (2)
VIDEO (1)
VTR SYNC (IC151 25)
VI SWP
DRUM ERR
CAP ERR
CAP ON
DRUM VS
CAP VS
IC408 (1/2)
DRUM MOTOR DRIVE
DRUM ON
D402
STBY
DRUM REV
MOTOR UNREG (CN404 27 30)
SS 5V (CN404 5 8)
VTR UNREG (W201 34)
CN406
Vcc
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
CAP FWD/
IC404
ATF SERVO
REC ATF
PB RF
LPF
BUFFER
LPF 2 (SCF)
SCF CLOCK
LPF 1 (SCF)
PRE AMP
BALANCED MODULATOR
16KHz BPF (SCF)
46KHz BPF (SCF)
FH DET
V REF
SCF CLOCK GENERATOR
11.718MHz X403
R/P PB
REF PILOT
A Vdd
Vdd
DRUM
FG
PG
FG (+)
FG/PG COM
PG (+)
LPF
WAVE SHAPER
2V
CAPSTAN FG
CFG Vcc
Vcc (CN004 3)
CFG (+)
CFG GND
CFG (-)
FG OUT
VTR SYNC
RF SWP
VI SWP
DRUM FG
DRUM PG
DRUM PWM
CAP FG
CAP PWM
ATF ERROR
REF PILOT
ATT
CFG HMS
DRUM ACC
SS 5V (CN404 5 8)
A VREF
A VDD
VDD
Vpp
DRUM BRK
DRUM ON
DRUM REV
CAP ON
CAP FWD/ RVS
RP PB MODE
2.5Vp-p
H
IC402 64 REC/PB
5Vp-p
2V
IC402 97 REC/PB
22μsec
IC402 74 REC/PB
3.3msec.
IC402 67 REC/PB
IC402 66 REC/PB
0.72msec(SP)
1.4msec(LP)
IC402 68 REC/PB
IC402 73 REC/PB
8mVp-p
6μsec
IC404 48 PB
1Vp-p
6μsec
IC404 9 REC/PB
IC404 6 7 PB
5.4Vp-p
11.718MHz IC404 23 REC/PB
0.76Vp-p
6μsec
IC404 18 REC
2Vp-p
IC404 15 PB


(See Page 119)
DD-48 BOARD
(See Page 137)
SL-27 BOARD (1/2)
MECHA CHASSIS
(See Page 118)
RF SWP
AUDIO (AU-138)
CN401
VIDEO (2)
VTR SYNC (IC151 25)
VIDEO (1)
VI SWP
5Vp-p
2V
IC402 97 REC/PB
IC408 (1/2)
LPF
PROTECT
0.16V
CN404
DRUM ERR
CAP ON
CAP ERR
CN901
22μsec
IC402 74 REC/PB
ATT
IC402 73 REC/PB
IC901 (1/2)
DRUM PWM DRIVE
SHORT CIRCUIT PROTECT
PWM MOD
UNREG (F901)
TRIANGLE OSC
Q901
BUFFER
Q905 SWITCHING
Q906 SWITCHING
L912
L913
DRUM VS
CAP VS
MOTOR UNREG (CN404 27, 30)
SS 5V (CN404 5, 8)
VTR UNREG (W201 34)
IC408 (1/2)
DRUM MOTOR DRIVE
DRUM ON
D402
REF
OVER-HEAT PROTECT
STBY
START CONTROL
TIMING CONTROL
SOFT SWITCHING DRIVE
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
ROTER POSITION DETECT
Vcc 2
Vcc 1
COM
VS
U IN
V IN
W IN
DRUM REV
DIR
BRAKE
I COM
R549-552
DRUM DRIVE CURRENT SENS
1.4Vp-p
10msec
IC408 14, 16, 18 REC/PB
CN406
W522
CN005
CN523
M901 DRUM MOTOR
CN004
IC001 (1/2)
CAPSTAN MOTOR DRIVE
Vcc
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
U IN 1
U IN 2
V IN 1
V IN 2
W IN 1
W IN 2
120° LOGIC
STBY
POWER OFF
HE POWER
VH+
VH-
CAP FWD/REVS
FRC
CAP U
CAP V
CAP W
M902 CAPSTAN MOTOR
C HALL Vcc
C HALL GND
8mVp-p
6μsec
IC404 48 PB
1Vp-p
IC404 9 REC/PB
IC404 6 7 PB
5.4Vp-p
11.718MHz IC404 23 REC/PB
R/P PB
REF PILOT
SCF CLOCK
LPF 2 (SCF)
LPF 1 (SCF)
BUFFER
PRE AMP
BALANCED MODULATOR
16KHz BPF (SCF)
46KHz BPF (SCF)
LPF
FH DET
V REF
SCF CLOCK GENERATOR
11.718MHz X403
2Vp-p
IC404 15 PB

3-9. SYSTEM CONTROL BLOCK DIAGRAM


(See Page 115)
VK-27 BOARD (See Page 117)
ED-35 BOARD (See Page 116)
CF-32 BOARD
CN-65 BOARD (See Page 115)
VS-95 BOARD (See Page 107)
S976 STOP
S981 EDIT SEARCH (+)
S979 REW
S978 EDIT SEARCH (-)
S984 PAUSE
S980 PLAY
S978 EDIT SEARCH (REV)
S981 EDIT SEARCH (CUE)
S983 FF
S977 POWER CAMERA OFF PLAYER
S990 EDIT
S998 REMOTE COMMANDER ON/OFF
S987 SUMMER TIME
S989 AREA
S986 BEEP
S995 COUNTER RESET
S993 DATE
S991 FADER
S996 TIME
S994 TAPE RETURN
S992 PROGRAM AE
OFF
PORTRAIT
SPORTS
HIGH SPEED
NIGHT
SP991 BEEP
BEEP ON
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
CAM PWR SW COM
D 5V
FOCUS 1
FOCUS 2
W987
W986
W991
CN518
CN403
D 5V (CN404 ⑤,⑧)
(See Page 116) MF-191 BOARD
S971 FOCUS
S973 LENS COVER
S972 FOCUS RING
W971
CN993
IC403 MODE CONTROL (MASTER)
COM 0
COM 1
S3
S22
REMO CS
EEPROM CS
BEEP
XT 2
XT 1
X 2
X 1
SCK
DATA TO SLEV
DATA TO MSTR
VTR COSMO CS
SYS RESET
BATT IN
NC
VDD
RESET
LI PRE END
SYSTEM SYNC
TG STBY I
TITLE CS
S RAM CS
CAM COSMO CS
TITLE BUSY
SG CS
CRTC CS
VIDEO CS
VIDEO D/A CS
CC DOWN(K IN 7)
VTR DD ON
CAM DD ON
TALLY
S519 LOCK STANDBY
S520 START/STOP
W519
(See Page 137)
SW-205 BOARD
S901 EJECT
CN902
CAM POWER COM
LANC DC
LANC SIG
J902 REMOTE
CN901
DD-48 BOARD
(See Page 137)
IC409 LANC I/O
EVER 5V (IC401 ⑦)
WAKE UP
DATA OUT
DATA IN
LANC IN
LANC OUT
CURRENT LIMITER
5.6 V REG
UNREG
POWER CONT
VTR UNREG (CN404 ㉙)
PS401
5V REG
EVER 5V
BATTERY IN DETECT
LI 3V
LITHIUM BATTERY PRE END DETECT
INITIAL RESET
Q401
IC401
POWER (DD-48) VTR DD ON
CAM DD ON
EVF (VF-42) TALLY
CN404
CN102
CN407
(See Page 117)
LI-44 BOARD
LITHIUM BATTERY
CN516
IC406 CHARACTER GENERATOR
VDD
OSC 0
OSC 1
OSC FILTER
FL 401
DDS VOB
DDS VOW
DS VOB
DS VOW
STB
DATA
PCL
CRTC CS
ZOOM SW
BACK UP VDD
CG H
CR PULSE
DDS VOB
DDS VOW
SYSTEM RESET
VTR SCK
DATA TO SLV
DATA TO MSTR
CAM COSMO CS
CAMERA (1)
SG CS
TG STBY I
FLD
PB V
CAM VD
FOCUS 1
FOCUS 2
W405
ZOOM FT
ZOOM T
ZOOM FW
ZOOM F
W
T
(See Page 126)
ZOOM SWITCH UNIT
CN603
IC602 REMOTE CONTROL RECIEVER
Vcc
R OUT
SIRCS SIG
SS 5V
SS 5V (CN404 ⑤,⑧)
CN602
AU-138 BOARD
(See Page 125)


e 107)
IC407
SIRCS CONTROL
SIRCS IN
CS
RESET
Vcc
SCK
SO
SI
X404
700KHz
Q403
SS 5V (CN404 ⑤,⑧)
IC405
EEPROM
VCC
CS
SCK
TO SLVE
TO MAST
IC403
MODE CONTROL
(MASTER)
COM 0
COM 1
S3
S22
REMO CS
EEPROM CS
BEEP
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
XT 2
XT 1
X2
X1
X402
33MHz
X401
4.19MHz
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
SCK
DATA TO SLEV
DATA TO MSTR
VTR COSMO CS
SYS RESET
BATT IN
NC
VDD
RESET
L1 PRE END
SYSTEM SYNC
TG STBY 1
TITLE CS
S RAM CS
CAM COSMO CS
TITLE BUSY
SG CS
CRTC CS
VIDEO CS
VIDEO D/A CS
CC DOWN(K IN 7)
VTR DD ON
CAM DD ON
TALLY
CR PULSE
CC DOWN
VTR UNREG
(CN404㉙)
SS 5V
(CN404 ⑤⑧)
X403
11.718MHz
XTAL
OSC
IC402
MECHANISM
CONTROL
JACK IN/OUT DET
RESET
SCK
DATA TO MSTR
DATA TO SLEV
VTR COSMO CS
AVREF
AVDD
VDD
VPP
BATT SENS
XTAL
EXTAL
FLD
PB V (SYSTEM SYNC)
CAM VD
LANC IN
LANC OUT
IC410
LOADING MOTOR
DRIVE
UNLOAD
LOAD
LM LIM CONT
LM LIMIT DET
DEC2
DEC1
LIMIT EN
LIMIT OUT
VC
VR
Q409
5V REG
PS402
VTR UNREG
(CN404㉙)
SS 5V
(CN404⑤⑧)
CN406
MSW 0
MSW 1
MSW 2
DEW
TOP SENS
END SENS
S REEL FG
T REEL FG
REEL HALL CONT
T/E LED ON
CC DOWN
ME/MP
REC PROOF
Q405
LED DRIVE
SL-27 BOARD
(See Page 119)
W522
W521
UNLOAD
LOAD
CN522
CN521
DEW SENS
MT 5V
Q521
TAPE TOP DETECT
TAPE END DETECT
IC501
WAVE SHAPER
Vcc
T/E LED
S REEL (−)
S REEL (+)
T REEL (−)
T REEL (+)
(See Page 118)
MECHA SHASSIS
LM-40 BOARD
CN002
M903
LOADING MOTOR
FP-442 BOARD
CN003
MODE SWITCH
S001
S005
DEW SENSOR
R009
CC DOWN
Q001
TAPE TOP SENSOR
Q002
TAPE END SENSOR
D001
TAPE LED
S REEL FG SENSOR
T REEL FG SENSOR
REEL HALL CONT
ME/MP
REC PROOF
CN001
S002
ME/MP
MP/MP-HG
REC PROOF
LS-33 BOARD
SERVO
RP PB MODE
FE ON
RF SW P
VTR SYNC
V1 SWP
ME/MP
DS ON
JOG VD
JOG
VA PB MODE
CAM/LINE
VIDEO MUTE
SP/LP
PR PB MODE
FE ON
SP/LP
RF SW P
ME/MP
PB RF
VIDEO (2)
VTR SYNC
DS ON
JOG VD
JOG
VA PB MODE
V1 SWP
CAM/LINE
V MUTE
SP/LP
VIDEO (1)
VIDEO CS
VIDEO D/A CS
DATA TO SLEV
SCK
SYNC DET OUT
VIDEO 0 SW
VIDEO 1 SW
AUDIO MUTE
AGC SLOW
EDIT
E MODE
E/L DET
H CHG
EDIT
ATF CONT
CN401
VA PB MODE
SP/LP
RF SWP
AUDIO MUTE
AUDIO
(AU-138)
IC404
SP/LP DETECT
CLOG DETECT
PB SP/LP DET
CLOG
PB SP/LP DETECT
CLOG DETECT
CR PULSE DETECT
RF DETECT
GCA
INTEGRATOR
AVDD
VDD
SS 5V
(CN404⑤⑧)
PB RF
ATF CONT
NAMO 32
CR PULSE

3-10. MECHANISM CONTROL MICROPROCESSOR PIN FUNCTION (IC402 ON VS-95 BOARD: CXP80624)

Pin No.	Port Name	Signal	I/O	Connection	Function
1	PB3/PP011	RP PB MODE	O	VS	REC/PB select signal of REC/PB amplifier (IC001 on VS-95 board) and ATF servo IC (IC404 on VS-95 board). "H": PB.
2	PB2/PP010	FE ON	O	VS	Flying erase oscillation ON/OFF control signal. "L": oscillation.
3	PB1/PP09	JOG VD	O	VS	False VD signal to be inserted into playback video signal during variable speed playback.
4	PB0/PP08	JOG	O	VS	Variable speed/normal speed playback select signal of video circuit. "H" when variable speed playback.
5	PC7/RT07	JACK IN/OUT	I	VS	Not used. Connected to +5V.
6	PC6/RT06	1.7M DET	I	VS	Not used.
7	PC5/RT05	JACK MONO/STE DET	I	VS	
8	PC4/RT04	INT VD	I		
9	PC3/RT03	PB V (SYSTEM SYNC)	O	MODE CON	V sync for mode controller.
10	PC2/RT018	SYNC DET OUT	O	VS	Sync detect output. "L" when Sync is detected.
11	PC1/RT017	E/L DET	I	VS	Not used.
12	PC0/RT016	MIC MONO/ST DET	I	AU	
13	PJ7	M SW 0	I	MD	Mode switch input.
14	PJ6	M SW 1	I	MD	
15	PJ5	M SW 2	I	MD	
16	PJ4	CC DOWN	I	MD	Cassette compartment down switch input. "L": down.
17	PJ3	REC PROOF	I	MD	Erasure protection switch input. "L" when REC prohibit.
18	PJ2	ME/MP	I	MD	ME/MP switch input. "L": MP, "H": ME.
19	PJ1	HG/NOR	I	MD	Connected to GND.
20	PJ0	VIDEO MUTE	O	VS	Video output mute signal. "H": mute.
21	PD7	LINE MIX	I	VS	Not used.
22	PD6	MAT SEL 1	I	VS	
23	PD5	MAT SEL 2	I	VS	
24	PD4	MAT ON/OFF	O	VS	
25	PD3	E MODE	O	VS	
26	PD2	CAM/LINE	O	VS	Camera input/line input select signal. "H" when camera input.
27	PD1	DS ON	O	VS	Data screen ON/OFF signal. "H": ON.
28	PD0	EDIT	O	VS	Video circuit EDIT/NORMAL switch signal. "L": EDIT.
29	PH7	UNLOAD	O	VS	Loading motor control signal. "H" or "H" pulse when unloading.
30	PH6	LOAD	O	VS	Loading motor control signal. "H" or "H" pulse when loading.
31	PH5	LM LIM COM	O	VS	Loading motor limiter control signal. Temporary "H" when loading.
32	PH4	COMP REC	O	VS	Not used.
33	PH3	DRUM REV	O	VS	Drum rotating control signal . Normally "L".
34	PH2		O		N.C.
35	PH1		O		
36	PH0	REEL HALL CONT	O	VS	Reel FG sensor (HALL element) power supply control signal.
37	MP	MP			Connected to GND.
38	RST	RESET	I	MODE CON	Reset signal from mode control microprocessor. "L" when reset.
39	VSS	VSS			GND
40	XTAL	XTAL	I	VS	11.89 MHz clock oscillation circuit.
41	EXTAL	EXTAL	O	VS	
42	CSO	VTR COSMO CS	I	MODE CON	Chip select signal from mode control microprocessor (VS-95 board IC403)
43	S10	DATA TO SLVE	I	MODE CON	Serial data input from mode control microprocessor.
44	S00	DATA TO MSTR	O	MODE CON	Serial data output to mode control microprocessor.
45	SCKO	SCK	I	MODE CON	Serial clock input from mode control microprocessor.

	BL	END	EJECT	USE	LOAD	READY	TURN	REC/PB	FF
M SW 0	L	L	L	H	L	H	H	L	L
M SW 1	L	H	L	L	L	L	H	H	L
M SW 2	L	H	H	H	H	L	L	L	L

Pin No.	Port Name	Signal	I/O	Connection	Function
46	PF7/AN11	AUDIO MUTE	O	VS	Audio output mute signal. "H": mute.
47	PF6/AN10	1.7M OFF	O	VS	Not used.
48	PF5/AN9	GND	I		GND
49	PF4/AN8	GND	I		
50	AVSS	AVSS			Analog port GND.
51	AVREF	AVREF			Analog port reference voltage. Connected to +5V.
52	AVDD	VDD			Analog port power supply (5V).
53	PF3/AN7	N.C.			Connected to GND.
54	PF2/AN6	END SENS	I	VS	Tape end detection signal. Normally "L", "H" pulse: tape end.
55	PF1/AN5	TOP SENS	I	VS	Tape top detection signal. Normally "L", "H" pulse: tape top.
56	PF0/AN4	DEW	I	VS	Dew condensation detection signal. "L" when dew condensation.
57	AN3	BATT SENSE	I	VS	Battery voltage input for battery end detection. 1/2 divided by RB401.
58	AN2	ATF ERROR	I	VS	ATF error, ATF lock error input.
59	AN1	S REEL FG	I	VS	S reel FG signal input.
60	AN0	T REEL FG	I	VS	T reel FG signal input.
61	PG7/EXI1	PG7 (N.C.)			Connected to GND.
62	PG6/EXI0	CAM VD	I	CAM SG	VD signal from camera circuit sync generator. V period pulse.
63	PG5/SYNC1	FLD	I	CAM SG	FIELD signal from camera circuit sync generator. 2V period pulse.
64	PG4/SYNC0	VTR SYNC	I	VS	Composite sync signal separated from REC/PB Y signal.
65	PG3/PBCTL	PB SP/LP DET	I	VS	Discriminates PB tape REC mode when CUE/REVIEW/FF and REW. "L": LP.
66	PG2/DPG	DRUM PG	I	VS	Drum PG signal input. For drum phase servo 40 msec period "H" pulse.
67	PG1/DFG	DRUM FG	I	VS	Drum FG signal input. For drum speed servo 3.3 msec period pulse.
68	PG0/CFG	CAP FG	I	MD	Capstan FG signal input. For capstan speed servo. Approx. 1388 Hz when REC/PB (SP).
69	PE7/DAB0	N.C.	O		N.C.
70	PE6/DAB0	T/E LED ON	O	VS	Tape LED ON/OFF signal. 100 msec period "H" pulse when REC/PB.
71	PE5/DAA1	N.C.	O		N.C.
72	PE4/DAA0	N.C.	O		
73	PE3/PWM1	CAP PWM	O	VS	Capstan error signal output 20.15 µsec PWM signal.
74	PE2/PWM0	DRUM PWM	O	VS	Drum error signal output 20.15 µsec PWM signal.
75	PE1/EC/INT2	C FG	I	MD	Capstan FG signal input. For tape counter.
76	PE0/INT0	S JACK IN			Not used, connected to +5V.
77	P17/ST1	LANC IN	I	VS	Control L serial data input.
78	P16/SO1	LANC OUT	O	VS	Control L serial data output.
79	P15/SCK1	LM LIMIT DET	I	VS	Loading motor limiter ON detection signal. Normally "H", "L" when limiter ON.
80	P14/INT1	AGC SLOW			Not used.
81	P13/TO	DRUM ON	O	VS	Drum driver ON/OFF control signal. "H" when drum ON.
82	P12/PWM	CLOG	O	VS	Head clog detection signal. "L" when no trouble.
83	P11/PO	REF PILOT	O	VS	ATF servo reference pilot signal. Synchronized when drum rotation to output by selecting four frequencies. f1=101.0 kHz, f2=117.2 kHz, f3=162.8 kHz and f4=146.5 kHz.
84	P10/PCK				Connected to +5V.
85	PKO	13/10 SW	I	MD	Not used.
86	VSS	VSS			GND
87	VDD	VDD			VDD
88	N.C.	(VPP)			Connected to +5V.
89	PA7/PP07	DRUM ACC	O	VS	Drum motor acceleration signal. Not used.

Pin No.	Po
90	PA
91	PA
92	PA
93	PA
94	PA
95	PA
96	PA
97	PB
98	0
99	11
100	PB

Pin No.	Port Name	Signal	I/O	Connection	Function
90	PA6/PP06	DRUM BRK	O	VS	Drum motor brake signal. Normally "L".
91	PA5/PP05	SP/$\overline{\text{LP}}$	O	VS	SP/LP select signal. "L": LP.
92	PA4/PP04	AU IN/OUT	O		Not used.
93	PA3/PP03	VIDEO O SW	O	VS	VIDEO OUT inhibit signal. "H": inhibit.
94	PA2/PP02	VIDEO I SW	O	VS	VIDEO IN/OUT select signal. Not used.
95	PA1/PP01	VA PB MODE	O	ALL	Video/audio circuit REC/PB select signal. "H": PB.
96	PA0/PP00	VI SWP	O	VS	RF switching pulse signal for video circuit. 25 Hz, 50% duty pulse.
97	PB7/PP015	RF SWP	O	ALL	RF switching pulse signal for REC/PB amp and Audio circuit. 25 Hz, 50% duty pulse.
98	0	H CHG	O	VS	Not used.
99	11	CAP ON	O	MD	Capstan driver ON/OFF control signal. "H" when capstan ON.
100	PB4/PP012	CAP FWD/$\overline{\text{RVS}}$	O	MD	Capstan rotating direction control signal. "H": FWD, "L": RVS.

3-11. MODE CONTROL MICROPROCESSOR PIN FUNCTION (IC403 ON VS-95 BOARD: μPD75316)

Pin No.	Port Name	Signal	I/O	Connection	Function
1	S12	S12	O		Segment terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V) Not used.
2	S13	S13	O		
3	S14	S14	O		
4	S15	S15	O		
5	S16	S16	O		
6	S17	S17	O		
7	S18	S18	O		
8	S19	S19	O		
9	S20	S20	O		
10	S21	S21	O		
11	S22	S22	O		
12	S23	S23	O		
13	S24/BP0	$\overline{\text{EEPROM CS}}$	O		Chip select signal to EEPROM (IC406 on VS-95 board). 1/2V period "L" pulse.
14	S25/BP1	N.C	O		Not used.
15	S26/BP2	TG STBY 1	O	CAM	Power save control signal to timing generator (IC801 on VC-122 board). Normally "L".
16	S27/BP3		O		N.C.
17	S28/BP4	$\overline{\text{CS TITLE}}$	O	CAM	Not used.
18	S29/BP5	REMO CS	O		Chip select signal to sircs remote controller (IC907 on VS-95 board). 1V period "L" pulse.
19	S30/BP6	S RAM CS	O		Not used.
20	S31/BP7	$\overline{\text{CAM COSM CS}}$	O	CAM	Chip select signal to camera controller (IC709 on VC-122 board). 1V period "L" pulse.
21	COM0	COM 0	O		Common terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V) Not used.
22	COM1	COM 1	O		
23	COM2	COM 2	O		
24	COM3	COM 3	O		
25	BIAS	BIAS	O		Bias voltage output for voltage deviding resistor. Not used.
26	VLC0	VCC 0	I		Power source 0 input Power source for LCD dirve. Not used.
27	VLC1	VCC 1	I		Power source 1 input
28	VLC2	VCC 2	I		Power source 2 input
29	P40	K OUT 4	O	all	KEY matrix output. 1V period "L" pulse output when corresponding key is pressed. "L" when other cases.
30	P41	K OUT 5	O	all	
31	P42	$\overline{\text{SYS RESET}}$	O	all	Output signal to reset each IC when power is turned on. Normally "H".
32	P43	$\overline{\text{TALLY}}$	O	EVF	Tally LED ON/OFF signal. "L": ON.
33	VSS	VSS			GND
34	P50	K OUT 0	O	all	KEY matrix output. 1V period "L" pulse output when corresponding key is pressed. "L" when other cases.
35	P51	K OUT 1	O	all	
36	P52	K OUT 2	O	all	
37	P53	K OUT 3	O	all	
38	P00/INT4	$\overline{\text{BATT IN}}$	I		Clock select to 32 kHz when "L" and to 4.19 MHz with "H" when Battery is turned on. "L" is select.
39	P01/$\overline{\text{SCK}}$	$\overline{\text{SCK}}$	O	all	Serial clock output terminal, Serial clock (2 μS) communication.
40	P02/SO/SB0	DATA TO SLVE	O	all	Serial bus output terminal, Serial clock (2 μS) communication.
41	P03/SI/SB1	DATA TO MSTR	I	all	Serial bus input terminal, Serial clock (2 μS) communication.
42	P10/INT0	SYSTEM SYNC	I	all	(Edge detection vector interruption), System synchronization input port from CXP80624 (IC402 on VS-95 board).

Pin No.	Port Name	Signal	I/O	Connection	Function
43	P11/INT1	$\overline{\text{LI PRE END}}$	I		(Edge detection vector interruption), Lithium PRE END is selected with "L".
44	P12/INT2	$\overline{\text{LANC PWR ON}}$	I		Power on signal input from wired remote control. "L" when power switch pressed.
45	P13/TIO	TITLE BUSY	I	CAM	Not used.
46	P20/PT00	VTR DD ON	O	PS	VTR power source (VIDEO 5V, RP 5V, AUDIO 5V, EVF 5V, D5V, (SS5V), D4V, CORE 4V) control signal. "H" when power switch is in "PLAYER" or "CAMERA" position.
47	P21	CAM DD ON	O	PS	CAMERA power source (CAM 5V, +15V, –9V) control signal. "H" when power switch is in "CAMERA" position.
48	P22/PCL	$\overline{\text{VIDEO D/A CS}}$	O	VA	Serial data load signal to video circuit EVR (IC156, 158 on VS-95 board). 1V period "H" pulse.
49	P23/BUZ	BEEP	O		Buzzer output. Normally "L". 2 kHz pulse: alarm.
50	P30/LCDCL	$\overline{\text{VIDEO CS}}$	O	VA	Chip select signal to Y process IC (IC151 on VS-95 board). 1V period "L" pulse.
51	P31/SYNC	$\overline{\text{VTR COSM CS}}$	O		Chip select signal to mechanism controller (IC402 on VS-95 board). 1V period "L" pulse.
52	P32	$\overline{\text{SG CS}}$	O	CAM	Chip select signal to sync generator (IC704 on VC-122 board). 1V period "L" pulse.
53	P33	$\overline{\text{CRTC CS}}$	O	CAM	Strobe signal for character generator (IC406 on VS-95 board). 1V period "H" pulse.
54	VDD	VDD			VDD
55	XT1	XT1	I		SUB system clock. 32 kHz oscillation terminal.
56	XT2	XT2			
57	N.C.	N.C.			N.C.
58	X1	X1	I		Main system clock. 4.19 MHz oscillation terminal.
59	X2	X2	I		
60	P60/KK0	K IN 0	I	all	KEY matrix input. 1V period "L" pulse input when corresponding key is pressed. "H" when other case.
61	P61/KR1	K IN 1	I	all	
62	P62/KR2	K IN 2	I	all	
63	P63/KR3	K IN 3	I	all	
64	P70/KR4	K IN 4	I	all	
65	P71/KP5	K IN 5	I	all	
66	P72/KP6	K IN 6	I	all	
67	P73/KP7	$\overline{\text{CC DOWN}}$	I	MD	Cassette compartment lock switch input. "L": Lock.
68	$\overline{\text{RESET}}$	$\overline{\text{RESET}}$	I		System reset input. "L": Reset, Normally: "H".
69	S0	CLK CHK	O		N.C.
70	S1	S1	O		Segment terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V) Not used.
71	S2	S2	O		
72	S3	S3	O		
73	S4	S4	O		
74	S5	S5	O		
75	S6	S6	O		
76	S7	S7	O		
77	S8	S8	O		
78	S9	S9	O		
79	S10	S10	O		
80	S11	S11	O		

3-12. INTERFACE

3-12-1. System Control – Video/Audio Block Interface (VS-95 BOARD)

NAME	I/O	No.	VTR MODE										
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB·PAUSE	FRAME	SLOW
						CUE	REVIEW		CUE	REVIEW			
SP/$\overline{\text{LP}}$	O	IC402 (91)	*1	H	H	*2	*2	*2	*2	*2	*1	*1	*1
VA PB MODE	O	IC402 (95)	L	L	L	H	H	H	H	H	H	H	H
AUDIO MUTE *13	O	IC402 ㊻	L	L	L	H	H	L	H	H	H	H	H
VIDEO MUTE	O	IC402 ⑳	*14	*14	*14	*15	*15	*15	*15	*15	*15	*15	*15
CAM/$\overline{\text{LINE}}$	O	IC402 ㉖	L	L	L	L	L	L	L	L	L	L	L
JOG VD	O	IC402 ③	L	L	L	*5	*5	L	*5	*5	*5	*5	*5
RP PB MODE	O	IC402 ①	H	H	H	H	H	H	H	H	H	H	H
$\overline{\text{FE ON}}$	O	IC402 ②	H	H	H	H	H	H	H	H	H	H	H
RF SWP	O	IC402 (97)	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
JOG	O	IC402 ④	L	L	L	H	H	L	H	H	H	H	H
$\overline{\text{VIDEO CS}}$	O	IC403 ㊿	V period "L										
$\overline{\text{VIDEO D/A CS}}$	O	IC403 ㊽	V period 'H										
DATA TO MSTR	I	IC403 ㊶	V period "L										
DATA TO SLVE	O	IC403 ㊵	V period pu										
$\overline{\text{SCK}}$	I	IC403 ㊴	V period "H										
PB SP/$\overline{\text{LP}}$ DET	I	IC402 (65)	L	*10	*10	*10	*10	L	*10	*10	*10		
CLOG	I	IC402 (82)	H	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11
VTR SYNC	I	IC402 (64)	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12

*1. Outputs discrimination result of the mode just before. "H": SP mode, "L": LP mode.
*2. Outputs discrimination result of the playback tape. "H" : SP mode, "L": LP mode.
*3. Edit search button pressed when playback pause mode.
*4. Mode for adjustment.
*5. False VD signal
*6. By REC MODE switch, "H": SP mode, "L": LP mode.
*7. 25 Hz duty 50% pulse (synchronized with drum rotation)

*10. "H": SP recording
*11. "H": no recording
*12. Composite sync si
video signal. (pola
*13. "H" during camera
*14. "L" when external
*15. "H" when tape no

elected with

power

5V, D5V,
witch is in

nal. "H"

VS-95

1V period

board). 1V

d). 1V period

l). 1V period

d. "H" when

3-12. INTERFACE

3-12-1. System Control – Video/Audio Block Interface (VS-95 BOARD)

NAME	I/O	No.	VTR MODE																CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB-PAUSE	FRAME	SLOW	X2	SHUTTLE EDIT *3		REC *4	REC *4 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW					FWD	REV					FWD	RVS	FWD	RVS
SP/$\overline{\text{LP}}$	O	IC402 (91)	*1	H	H	*2	*2	*2	*2	*2	*1	*1	*1	*1	*2	*2	*6	H/L	H/L	*6	*2	*2	*2	*2
VA PB MODE	O	IC402 (95)	L	L	L	H	H	H	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
AUDIO MUTE *13	O	IC402 ㊻	L	L	L	H	H	L	H	H	H	H	H	L	H	H	L	L	L	L	H	H	H	H
VIDEO MUTE	O	IC402 ⑳	*14	*14	*14	*15	*15	*15	*15	*15	*15	*15	*15	*15	*15	*15	*14	*14	L	L	*15	*15	*15	*15
CAM/$\overline{\text{LINE}}$	O	IC402 ㉖	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	L	L	L	L
JOG VD	O	IC402 ③	L	L	L	*5	*5	L	*5	*5	*5	*5	*5	*5	*5	*5	L	L	L	L	*5	*5	*5	*5
RP PB MODE	O	IC402 ①	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
$\overline{\text{FE ON}}$	O	IC402 ②	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
RF SWP	O	IC402 (97)	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
JOG	O	IC402 ④	L	L	L	H	H	L	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
$\overline{\text{VIDEO CS}}$	O	IC403 ㊿	V period "L" pulse																					
$\overline{\text{VIDEO D/A CS}}$	O	IC403 ㊽	V period 'H" pulse																					
DATA TO MSTR	I	IC403 ㊶	V period "L" pulse																					
DATA TO SLVE	O	IC403 ㊵	V period pulse train																					
$\overline{\text{SCK}}$	I	IC403 ㊴	V period "H" pulse																					
PB SP/$\overline{\text{LP}}$ DET	I	IC402 (65)	L	*10	*10	*10	*10	L	*10	*10	*10			*10	L	*10	H	H	H	H	L	*10	L	*10
CLOG	I	IC402 (82)	H	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	H	*11	*11	H	*11	*11	*11	*11
VTR SYNC	I	IC402 (64)	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12

*1. Outputs discrimination result of the mode just before. "H": SP mode, "L": LP mode.
*2. Outputs discrimination result of the playback tape. "H" : SP mode, "L": LP mode.
*3. Edit search button pressed when playback pause mode.
*4. Mode for adjustment.
*5. False VD signal
*6. By REC MODE switch, "H": SP mode, "L": LP mode.
*7. 25 Hz duty 50% pulse (synchronized with drum rotation)

*10. "H": SP recording area on tape. "L": LP recording area.
*11. "H": no recording area or drop out area on tape. Head clog detection input.
*12. Composite sync signal input separated from line input video signal, camera video signal or playback video signal. (polarity +)
*13. "H" during camera mode load/unload.
*14. "L" when external input (video) present. "H" when other cases.
*15. "H" when tape no signal. "L" when other cases.

3-12-2. System Control – Servo Block Interface

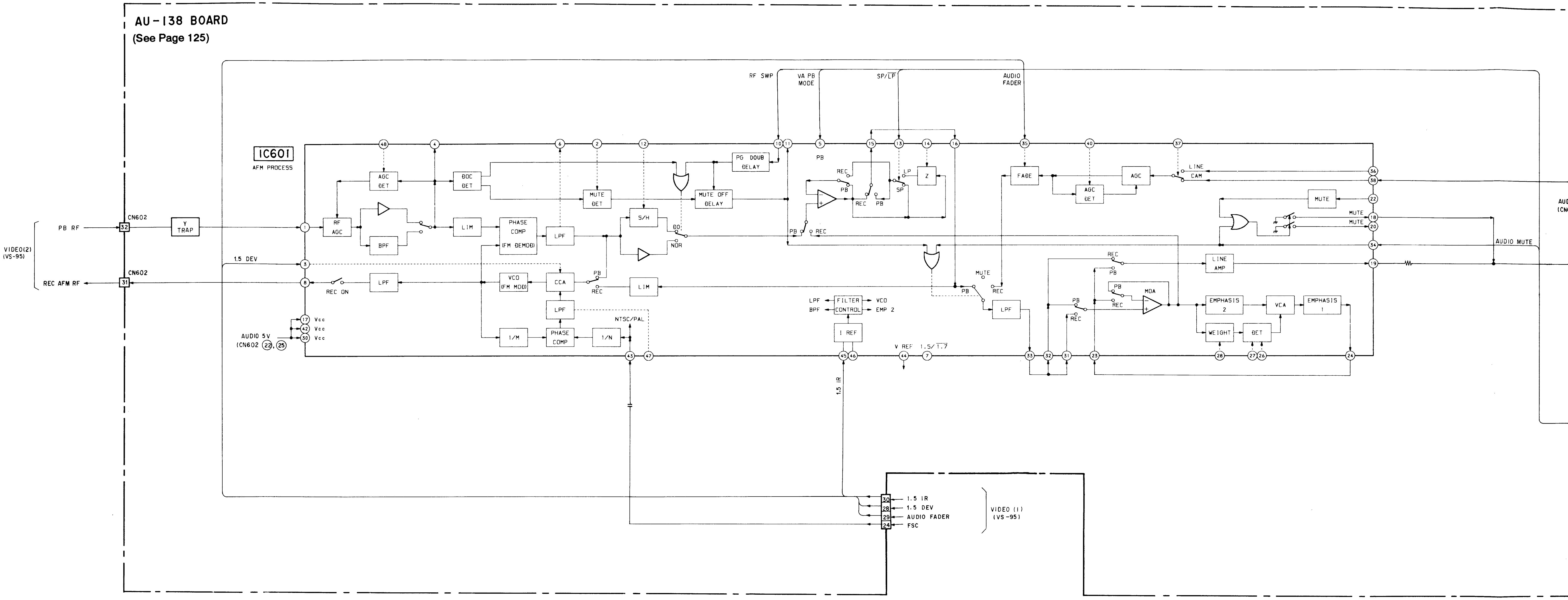
NAME	I/O	No.	VTR MODE																CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB·PAUSE	FRAME	SLOW	X2	SHUTTLE EDIT *13		REC *14	REC *14 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW					FWD	REV					FWD	RVS	FWD	RVS
T.REEL FG	I	IC402 (60)	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
S.REEL FG	I	IC402 (59)	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
ATF ERROR	I	IC402 (58)	–	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
DRUM PG	I	IC402 (66)	–	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3
DRUM FG	I	IC402 (67)	–	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP FG/ CFG HMS	I	IC402 (68), (75)	–	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
CAP ON	O	IC402 (99)	L	H	H	H	H	H	H	H	L	*8	*8	H	H	H	H	L	L	H	H	H	H	H
REF PILOT	O	IC402 (83)	*7	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
RP PB MODE	O	IC402 ①	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
DRUM REV *10	O	IC402 ㉝	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
CAP FWD/$\overline{\text{RVS}}$	O	IC402 (100)	L	H	L	H	L	H	H	L	L	*8	*8	H	H	L	H	L	L	H	H	L	H	L
DRUM PWM	O	IC402 (74)	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
CAP PWM	O	IC402 (73)	L	*9	*9	*9	*9	*9	*9	*9	L	*9	*9	*9	*9	*9	*9	L	L	*9	*9	*9	*9	*9
$\overline{\text{LM LIM CONT}}$ *11	O	IC402 ㉛	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
DRUM ON *12	O	IC402 (81)	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H

*1. Inputting waveform which is similar to sine wave according to reel rotation.
*2. ATF error voltage input
*3. One PG pulse input per one drum rotation, approx. 25 Hz.
*4. 12 FG pulses input per one drum rotation, approx. 300 Hz.
*5. 520 FG pulses input per one capstan rotation. Approx. 1388 Hz when REC/PB (SP). 694 Hz when PB (LP).
*6. Four frequencies output synchronized with drum rotation. f1=101.0 kHz, f2=117.2 kHz, f3=162.8 kHz and f4=146.5 kHz.
*7. f2 (117.2 kHz) output
*8. "H" pulse when tape run.
*9. 21.5 μsec period PWM signal
*10. Normally "H". Temporary "L" when load (drum reverse rotation).
*11. Temporary "H" when cassette loading (finger catch protection).
*12. "H": approx. 1.3 Vdc
*13. Edit search button pressed when playback pause mode.
*14. Mode for adjustment.

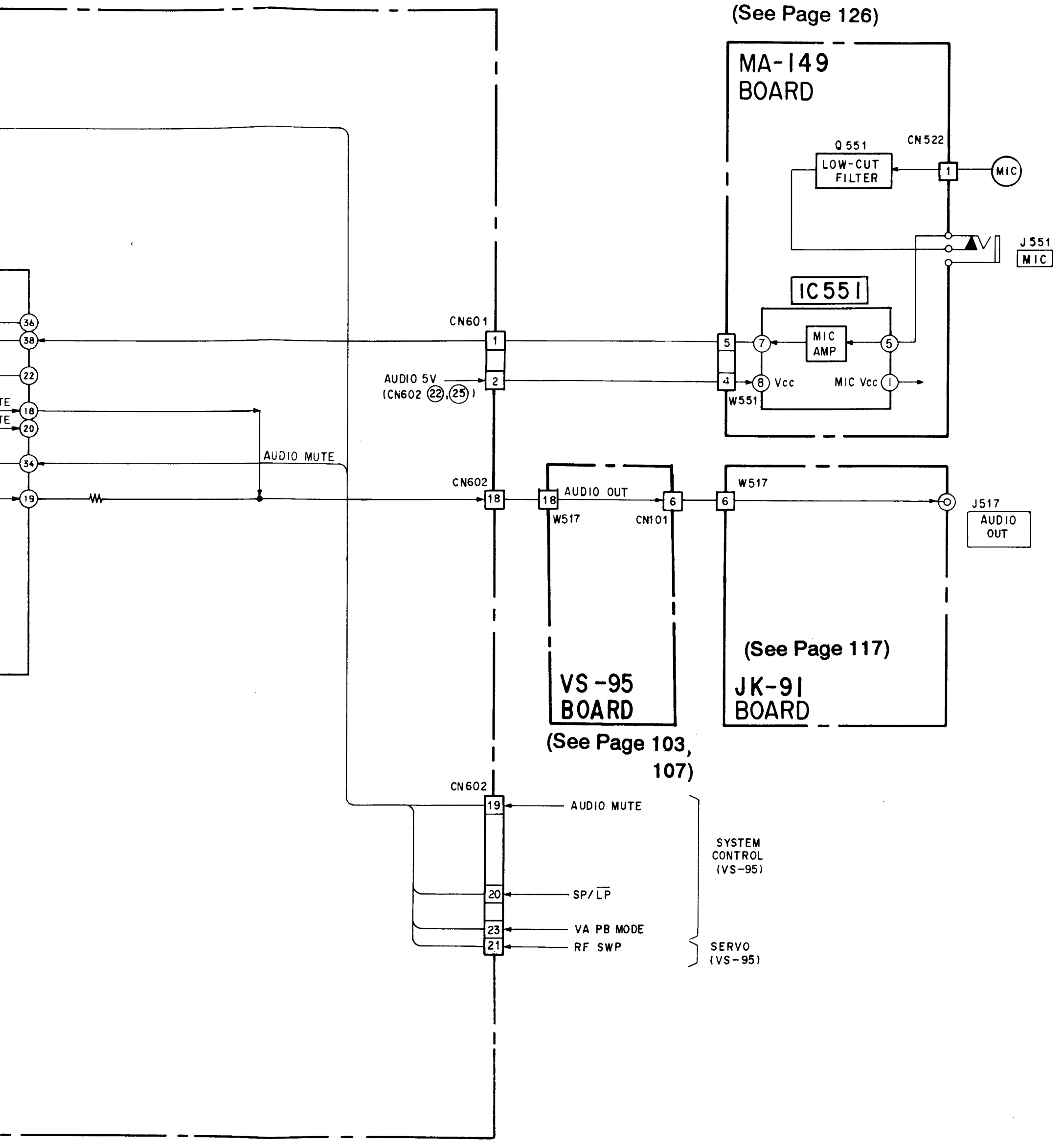
TR MODE									CAMERA MODE					
RCH	PB· PAUSE	FRAME	SLOW	X2	SHUTTLE EDIT *13		REC *14	REC *14 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
IEW					FWD	REV					FWD	RVS	FWD	RVS
1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3
4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
	L	*8	*8	H	H	H	H	L	L	H	H	H	H	H
	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
	H	H	H	H	H	H	L	H	H	L	H	H	H	H
	H	H	H	H	H	H	H	H	H	H	H	H	H	H
	L	*8	*8	H	H	L	H	L	L	H	H	L	H	L
	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
	L	*9	*9	*9	*9	*9	*9	L	L	*9	*9	*9	*9	*9
	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	H	H	H	H	H	H	H	H	H	H	H	H	H	H

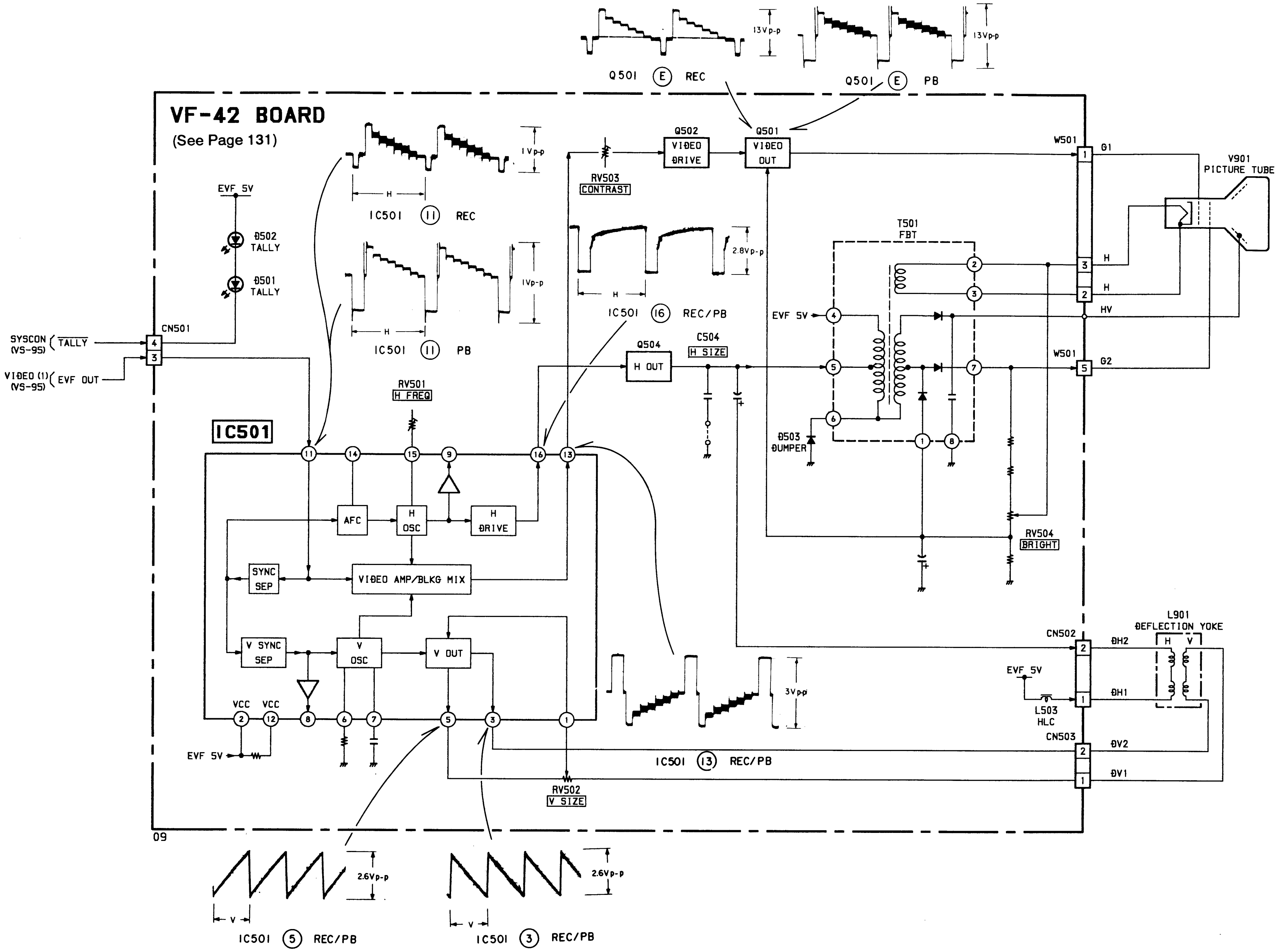
*7. f2 (117.2 kHz) output
*8. "H" pulse when tape run.
*9. 21.5 μsec period PWM signal
*10. Normally "H". Temporary "L" when load (drum reverse rotation).
*11. Temporary "H" when cassette loading (finger catch protection).
*12. "H": approx. 1.3 Vdc
*13. Edit search button pressed when playback pause mode.
*14. Mode for adjustment.

3-13. AUDIO BLOCK DIAGRAM

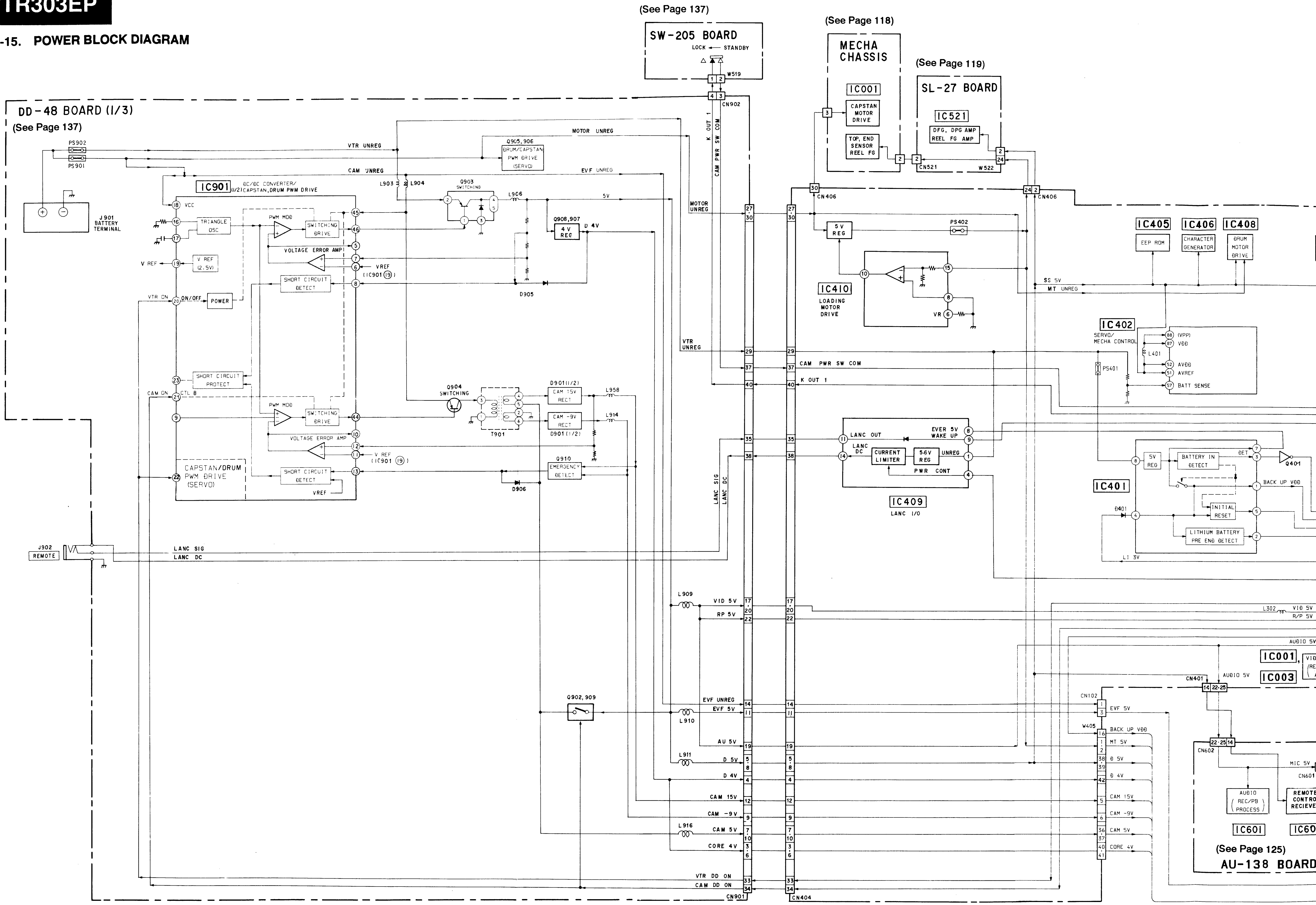

AU-138 BOARD
(See Page 125)
IC601
AFM PROCESS
VIDEO(2)
(VS-95)
PB RF
REC AFM RF
CN602
32
CN602
31
Y
TRAP
1.5 DEV
RF
AGC
AGC
DET
BPF
DOC
DET
LIM
PHASE
COMP
(FM DEMOD)
LPF
MUTE
DET
S/H
DO
NOR
PG DOUB
DELAY
MUTE OFF
DELAY
REC ON
LPF
VCO
(FM MOD)
CCA
PB
REC
LIM
LPF
1/M
PHASE
COMP
1/N
NTSC/PAL
AUDIO 5V
(CN602 ㉒, ㉕
Vcc
Vcc
Vcc
48
4
6
2
12
10
11
5
15
13
14
16
35
40
37
1
3
8
17
42
30
43
47
45
46
44
7
33
32
31
23
28
27
26
24
36
38
22
18
20
34
19
RF SWP
VA PB
MODE
SP/$\overline{LP}$
AUDIO
FADER
PB
REC
PB
REC
PB
LP
SP
Z
PB
REC
FADE
AGC
DET
AGC
LINE
CAM
MUTE
MUTE
MUTE
AUDIO MUTE
AUD
(CN
LINE
AMP
REC
PB
MUTE
PB
REC
LPF
FILTER
CONTROL
LPF
BPF
VCO
EMP 2
I REF
V REF
1.5/$\overline{1.7}$
1.5 IR
PB
REC
PB
REC
MOA
EMPHASIS
2
VCA
EMPHASIS
1
WEIGHT
DET
30
28
29
24
1.5 IR
1.5 DEV
AUDIO FADER
FSC
VIDEO (1)
(VS-95)

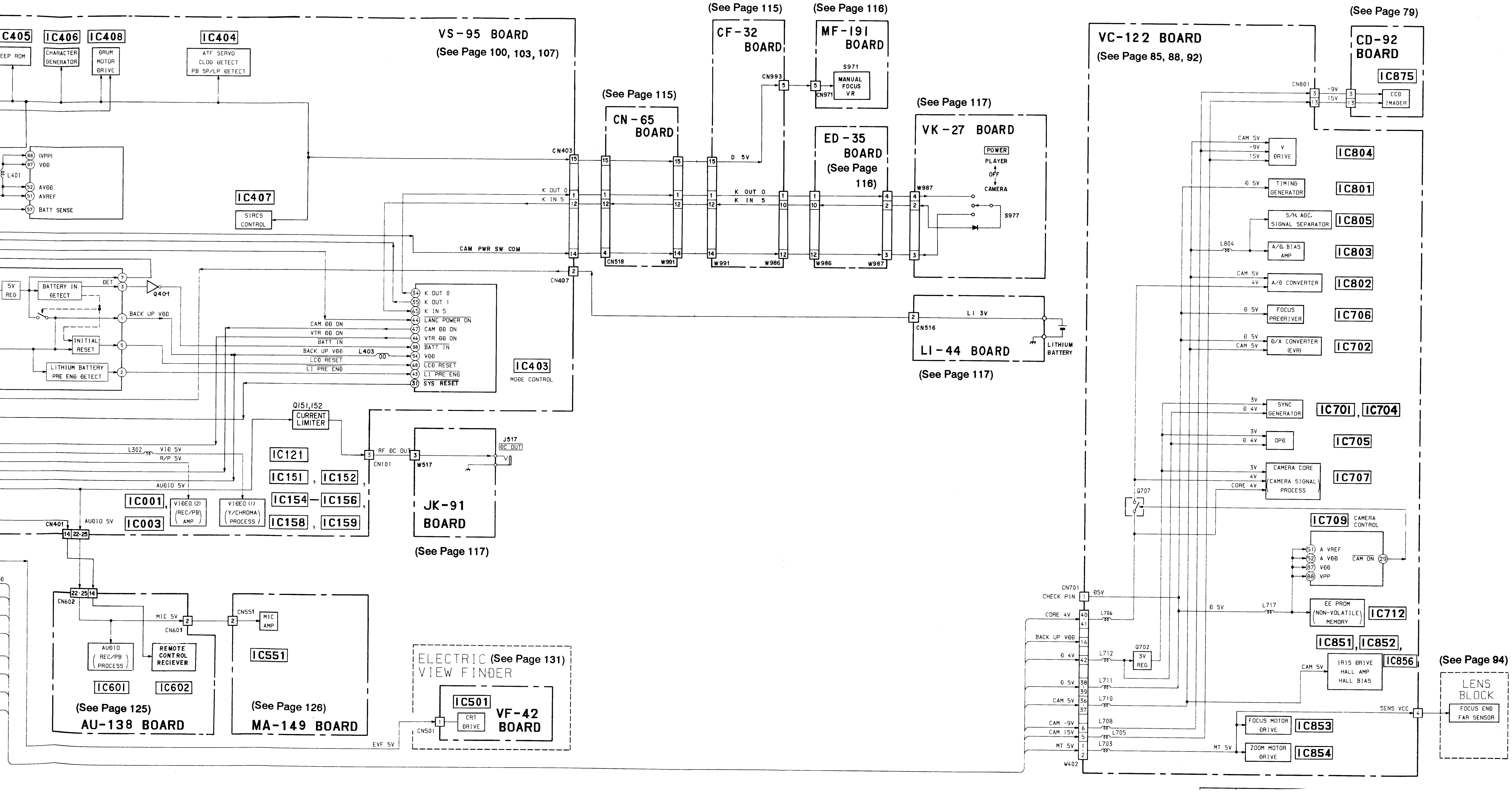
3-14. EVF BLOCK DIAGRAM


(See Page 126)
MA-149 BOARD
Q551 LOW-CUT FILTER
CN522
MIC
J551 MIC
IC551
MIC AMP
Vcc
MIC Vcc
W551
CN601
AUDIO 5V (CN602 ㉒,㉕)
AUDIO MUTE
CN602
AUDIO OUT
W517
CN101
J517 AUDIO OUT
VS-95 BOARD
(See Page 103, 107)
JK-91 BOARD
(See Page 117)
AUDIO MUTE
SP/LP
VA PB MODE
RF SWP
SYSTEM CONTROL (VS-95)
SERVO (VS-95)


Q501 Ⓔ REC
13Vp-p
Q501 Ⓔ PB
13Vp-p
VF-42 BOARD
(See Page 131)
EVF 5V
D502 TALLY
D501 TALLY
SYSCON (VS-95) TALLY
VIDEO (1) (VS-95) EVF OUT
CN501
IC501 ⑪ REC
1Vp-p
IC501 ⑪ PB
1Vp-p
H
RV503 CONTRAST
Q502 VIDEO DRIVE
Q501 VIDEO OUT
2.8Vp-p
IC501 ⑯ REC/PB
Q504 H OUT
C504 H SIZE
RV501 H FREQ
IC501
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
VCC
EVF 5V
T501 FBT
EVF 5V
D503 DUMPER
W501
G1
H
HV
G2
V901 PICTURE TUBE
RV504 BRIGHT
3Vp-p
IC501 ⑬ REC/PB
RV502 V SIZE
CN502
DH2
DH1
L901 DEFLECTION YOKE
EVF 5V
L503 HLC
CN503
DV2
DV1
09
2.6Vp-p
V
IC501 ⑤ REC/PB
2.6Vp-p
V
IC501 ③ REC/PB

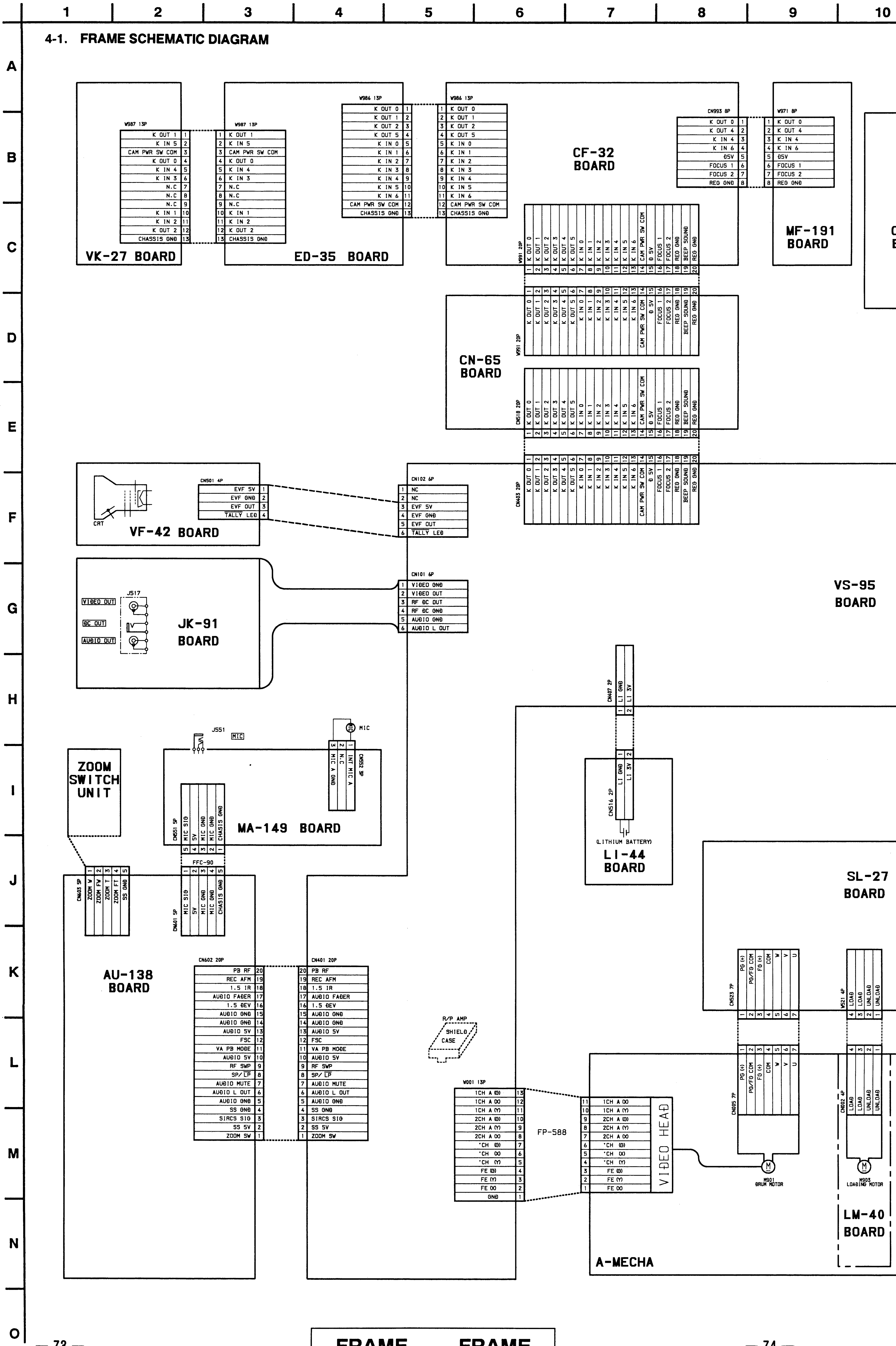
3-15. POWER BLOCK DIAGRAM


(See Page 137)
SW-205 BOARD
LOCK ← STANDBY
W519
CN902
(See Page 118)
MECHA CHASSIS
IC001
CAPSTAN MOTOR DRIVE
TOP, END SENSOR REEL FG
(See Page 119)
SL-27 BOARD
IC521
DFG, DPG AMP REEL FG AMP
CN521
W522
DD-48 BOARD (1/3)
(See Page 137)
PS902
PS901
J901 BATTERY TERMINAL
VTR UNREG
CAM UNREG
MOTOR UNREG
EVF UNREG
Q905,906 DRUM/CAPSTAN PWM DRIVE (SERVO)
IC901
DC/DC CONVERTER/ (1/2) CAPSTAN,DRUM PWM DRIVE
L903
L904
Q903 SWITCHING
L906
5V
VCC
TRIANGLE OSC
PWM MOD
SWITCHING DRIVE
VOLTAGE ERROR AMP
V REF (2.5V)
V REF
VREF (IC901 ⑲)
SHORT CIRCUIT DETECT
Q908,907 4V REG
D 4V
D905
VTR ON
ON/OFF
POWER
SHORT CIRCUIT PROTECT
CAM ON
CTL B
Q904 SWITCHING
T901
D901(1/2) CAM 15V RECT
CAM -9V RECT
D901(1/2)
L958
L914
CAPSTAN/DRUM PWM DRIVE (SERVO)
Q910 EMERGENCY DETECT
D906
J902 REMOTE
LANC SIG
LANC DC
K OUT 1
CAM PWR SW COM
MOTOR UNREG
VTR UNREG
L909
VID 5V
RP 5V
Q902,909
EVF UNREG
EVF 5V
L910
AU 5V
L911
D 5V
D 4V
CAM 15V
CAM -9V
L916
CAM 5V
CORE 4V
VTR DD ON
CAM DD ON
CN901
CN404
CN406
5V REG
PS402
IC410
LOADING MOTOR DRIVE
VR
IC405
EEP ROM
IC406
CHARACTER GENERATOR
IC408
DRUM MOTOR DRIVE
SS 5V
MT UNREG
IC402
SERVO/ MECHA CONTROL
L401
(VPP)
VDD
AVDD
AVREF
BATT SENSE
PS401
IC409
LANC I/O
LANC OUT
LANC DC
CURRENT LIMITER
5.6V REG
UNREG
PWR CONT
EVER 5V WAKE UP
IC401
5V REG
BATTERY IN DETECT
DET
Q401
BACK UP VDD
D401
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
LI 3V
L302
VID 5V
R/P 5V
AUDIO 5V
IC001
IC003
CN401
AUDIO 5V
CN102
EVF 5V
W405
BACK UP VDD
MT 5V
D 5V
D 4V
CAM 15V
CAM -9V
CAM 5V
CORE 4V
CN602
MIC 5V
CN601
AUDIO REC/PB PROCESS
REMOTE CONTRO RECIEVE
IC601
IC60
(See Page 125)
AU-138 BOARD

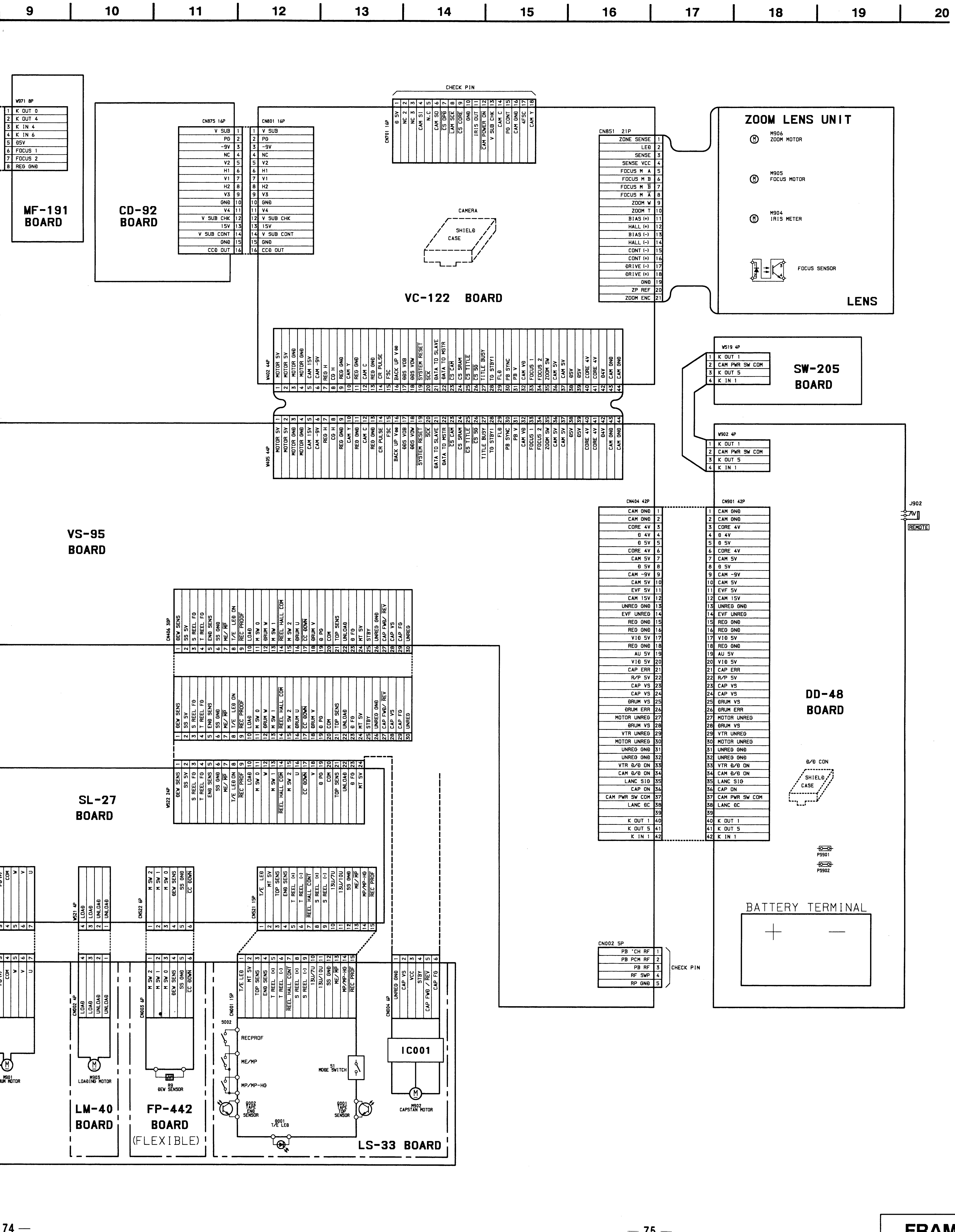

VS-95 BOARD
(See Page 100, 103, 107)
C405
EEP ROM
IC406
CHARACTER GENERATOR
IC408
DRUM MOTOR DRIVE
IC404
ATF SERVO
CLOG DETECT
PB SP/LP DETECT
IC407
SIRCS CONTROL
(VPP)
VDD
AVDD
AVREF
BATT SENSE
L401
5V REG
BATTERY IN DETECT
DET
Q401
BACK UP VDD
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
CAM PWR SW COM
K OUT 0
K IN 5
CN403
CN407
K OUT 0
K OUT 1
K IN 5
LANC POWER ON
CAM DD ON
VTR DD ON
BATT IN
VDD
LCD RESET
LI PRE END
SYS RESET
BACK UP VDD
L403
IC403
MODE CONTROL
Q151,152
CURRENT LIMITER
L302
VID 5V
R/P 5V
AUDIO 5V
IC121
IC151
IC152
IC154
IC156
IC158
IC159
IC001
IC003
VIDEO (2) (REC/PB) AMP
VIDEO (1) (Y/CHROMA) PROCESS
CN401
AUDIO 5V
RF DC OUT
CN101
(See Page 115)
CN-65 BOARD
CN518
W991
(See Page 115)
CF-32 BOARD
CN993
D 5V
K OUT 0
K IN 5
W991
W986
(See Page 116)
MF-191 BOARD
S971
MANUAL FOCUS VR
CN971
ED-35 BOARD
(See Page 116)
W986
W987
(See Page 117)
VK-27 BOARD
POWER
PLAYER
OFF
CAMERA
S977
W987
LI 3V
CN516
LI-44 BOARD
LITHIUM BATTERY
(See Page 117)
J517
DC OUT
W517
JK-91 BOARD
(See Page 117)
CN602
MIC 5V
CN601
AUDIO (REC/PB PROCESS)
REMOTE CONTROL RECIEVER
IC601
IC602
(See Page 125)
AU-138 BOARD
CN551
MIC AMP
IC551
(See Page 126)
MA-149 BOARD
ELECTRIC VIEW FINDER (See Page 131)
IC501
CRT DRIVE
CN501
VF-42 BOARD
EVF 5V
VC-122 BOARD
(See Page 85, 88, 92)
(See Page 79)
CD-92 BOARD
IC875
CCD IMAGER
CN801
-9V
15V
CAM 5V
V DRIVE
IC804
D 5V
TIMING GENERATOR
IC801
S/H, AGC, SIGNAL SEPARATOR
IC805
L804
A/D BIAS AMP
IC803
CAM 5V
4V
A/D CONVERTER
IC802
D 5V
FOCUS PREDRIVER
IC706
D 5V
CAM 5V
D/A CONVERTER (EVR)
IC702
3V
D 4V
SYNC GENERATOR
IC701
IC704
DPD
IC705
CAMERA CORE
CORE 4V
CAMERA SIGNAL PROCESS
IC707
Q707
IC709
CAMERA CONTROL
A VREF
A VDD
CAM ON
VDD
VPP
CN701
CHECK PIN
D5V
CORE 4V
L706
BACK UP VDD
D 4V
L712
Q702
3V REG
D 5V
L711
CAM 5V
L710
CAM -9V
CAM 15V
L708
L705
MT 5V
L703
W402
L717
EE PROM (NON-VOLATILE MEMORY)
IC712
IC851
IC852
IRIS DRIVE
HALL AMP
HALL BIAS
IC856
SENS VCC
FOCUS MOTOR DRIVE
IC853
ZOOM MOTOR DRIVE
IC854
(See Page 94)
LENS BLOCK
FOCUS END FAR SENSOR

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



VK-27 BOARD
ED-35 BOARD
CF-32 BOARD
MF-191 BOARD
CN-65 BOARD
VF-42 BOARD
JK-91 BOARD
VS-95 BOARD
ZOOM SWITCH UNIT
MA-149 BOARD
AU-138 BOARD
LI-44 BOARD
(LITHIUM BATTERY)
SL-27 BOARD
LM-40 BOARD
A-MECHA
FP-588
VIDEO HEAD
R/P AMP SHIELD CASE
M901 DRUM MOTOR
M903 LOADING MOTOR
W987 13P
W986 13P
CN993 8P
W971 8P
W991 20P
CN518 20P
CN403 20P
CN501 4P
CN102 6P
CN101 6P
J517
VIDEO OUT
DC OUT
AUDIO OUT
CRT
CN407 2P
CN516 2P
J551
MIC
CN552 3P
CN551 5P
FFC-90
CN603 5P
CN601 5P
CN602 20P
CN401 20P
W001 13P
CN523 7P
CN521 4P
CN005 7P
CN002 4P


9
10
11
12
13
14
15
16
17
18
19
20
W971 8P
1 K OUT 0
2 K OUT 4
3 K IN 4
4 K IN 6
5 05V
6 FOCUS 1
7 FOCUS 2
8 REG GND
MF-191 BOARD
CD-92 BOARD
CN875 16P
CN801 16P
1 V SUB
2 PG
3 -9V
4 NC
5 V2
6 H1
7 V1
8 H2
9 V3
10 GND
11 V4
12 V SUB CHK
13 15V
14 V SUB CONT
15 GND
16 CCD OUT
CHECK PIN
CN701 16P
1 D 5V
2 NC 2
3 NC 3
4 CAM SI
5 N.C
6 CAM SO
7 CS DPB
8 LAM SCK
9 CS CORE
10 GND
11 IRIS OUT
12 CAM POWER ON
13 V SUB CHK
14 CAM C
15 PG CONT
16 CAM GND
17 4FSC
18 CAM Y
CAMERA
SHIELD CASE
VC-122 BOARD
CN851 21P
1 ZONE SENSE
2 LED
3 SENSE
4 SENSE VCC
5 FOCUS M A
6 FOCUS M B
7 FOCUS M B̄
8 FOCUS M Ā
9 ZOOM W
10 ZOOM T
11 BIAS (+)
12 HALL (+)
13 BIAS (-)
14 HALL (-)
15 CONT (-)
16 CONT (+)
17 DRIVE (-)
18 DRIVE (+)
19 GND
20 ZP REF
21 ZOOM ENC
ZOOM LENS UNIT
M906 ZOOM MOTOR
M905 FOCUS MOTOR
M904 IRIS METER
FOCUS SENSOR
LENS
W402 44P
W405 44P
1 MOTOR 5V
2 MOTOR 5V
3 MOTOR GND
4 MOTOR GND
5 CAM 15V
6 CAM -9V
7 REG H
8 CG H
9 REG GND
10 CAM Y
11 REG GND
12 CAM C
13 REG GND
14 CR PULSE
15 FSC
16 BACK UP Vdd
17 OBS VDD
18 OBS VDW
19 SYSTEM RESET
20 SCK
21 DATA TO SLAVE
22 DATA TO MSTR
23 CS CAM
24 CS SRAM
25 CS TITLE
26 CS SG
27 TITLE BUSY
28 TG STBY1
29 FLD
30 PB SYNC
31 PB V
32 CAM VD
33 FOCUS 1
34 FOCUS 2
35 ZOOM SW
36 CAM 5V
37 CAM 5V
38 05V
39 05V
40 CORE 4V
41 CORE 4V
42 D4V
43 CAM GND
44 CAM GND
W519 4P
1 K OUT 1
2 CAM PWR SW COM
3 K OUT 5
4 K IN 1
SW-205 BOARD
W902 4P
1 K OUT 1
2 CAM PWR SW COM
3 K OUT 5
4 K IN 1
VS-95 BOARD
CN404 42P
CN901 42P
1 CAM GND
2 CAM GND
3 CORE 4V
4 D 4V
5 D 5V
6 CORE 4V
7 CAM 5V
8 D 5V
9 CAM -9V
10 CAM 5V
11 EVF 5V
12 CAM 15V
13 UNREG GND
14 EVF UNREG
15 REG GND
16 REG GND
17 VID 5V
18 REG GND
19 AU 5V
20 VID 5V
21 CAP ERR
22 R/P 5V
23 CAP VS
24 CAP VS
25 DRUM VS
26 DRUM ERR
27 MOTOR UNREG
28 DRUM VS
29 VTR UNREG
30 MOTOR UNREG
31 UNREG GND
32 UNREG GND
33 VTR D/D ON
34 CAM D/D ON
35 LANC SIG
36 CAP ON
37 CAM PWR SW COM
38 LANC DC
39
40 K OUT 1
41 K OUT 5
42 K IN 1
J902
REMOTE
DD-48 BOARD
D/D CON
SHIELD CASE
PS901
PS902
BATTERY TERMINAL
+
−
CN002 5P
1 PB CH RF
2 PB PCM RF
3 PB RF
4 RF SWP
5 RP GND
CHECK PIN
CN406 30P
1 DEW SENS
2 SS 5V
3 S REEL FG
4 T REEL FG
5 END SENS
6 SS GND
7 ME/MP
8 T/E LED ON
9 REC PROOF
10 LOAD
11 M SW 0
12 DRUM W
13 M SW 1
14 REEL HALL COM
15 M SW 2
16 DRUM U
17 CC DOWN
18 DRUM V
19 D PG
20 COM
21 TOP SENS
22 UNLOAD
23 D FG
24 MT 5V
25 STBY
26 UNREG GND
27 CAP FWD/REV
28 CAP VS
29 CAP FG
30 UNREG
W522 24P
SL-27 BOARD
W521 4P
CN402 4P
LOAD
LOAD
UNLOAD
UNLOAD
CN522 6P
CN003 6P
M SW 2
M SW 1
M SW 0
DEW SENS
SS GND
CC DOWN
CN521 15P
CN001 15P
1 T/E LED
2 MT 5V
3 TOP SENS
4 END SENS
5 T REEL (+)
6 T REEL (-)
7 REEL HALL CONT
8 S REEL (+)
9 S REEL (-)
10 13U/10U
11 SS GND
12 ME/MP
13 MP/MP-HG
14 REC PROF
CN004 6P
UNREG GND
CAP VS
VCC
STBY
CAP FWD/REV
CAP FG
M901 DRUM MOTOR
M903 LOADING MOTOR
LM-40 BOARD
B9 DEW SENSOR
FP-442 BOARD (FLEXIBLE)
S002
RECPROF
ME/MP
MP/MP-HG
S1 MODE SWITCH
Q002 TAPE END SENSOR
Q001 TAPE TOP SENSOR
D001 T/E LED
LS-33 BOARD
IC001
M902 CAPSTAN MOTOR

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- —— : indicated a lead wire mounted on the conductor side.
- ■ : Parts mounted on the conductor side.
- ▨ : Pattern from the side
  which enables seeing.
  (The other layers'patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- ● : Through hole.

* Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊡ : nonflammable resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repeair.*
- ━━ : B+ Line.*
- ━ ━ ━ : B– Line.*
- ⇨ : IN/OUT direction of (+, –) B LINE.*
- Circled numbers refer to waveforms.*

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

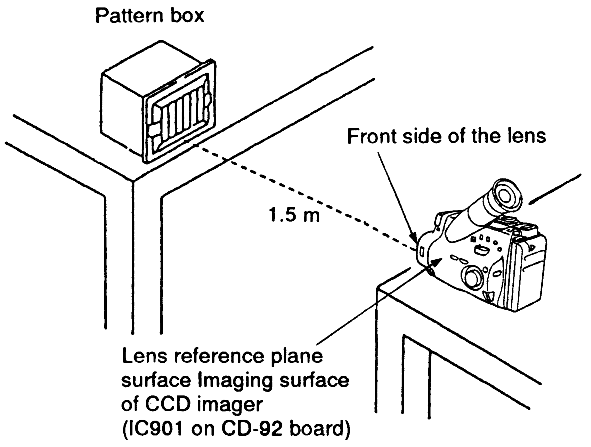
*: indicated by the color red.

- **Measuring conditions voltage value and waveform.**

(CAMERA, DIGITAL TITLE block)

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points.*
  Readings are taken with a digital multimeter (DC 10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

1. Connection


Pattern box
Front side of the lens
1.5 m
Lens reference plane surface Imaging surface of CCD imager (IC901 on CD-92 board)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

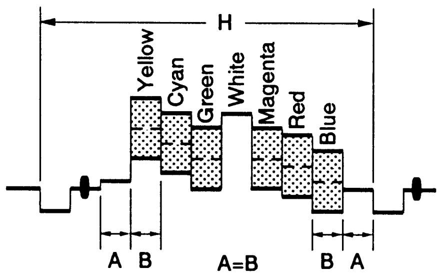


Fig. a (Video output terminal output waveform)

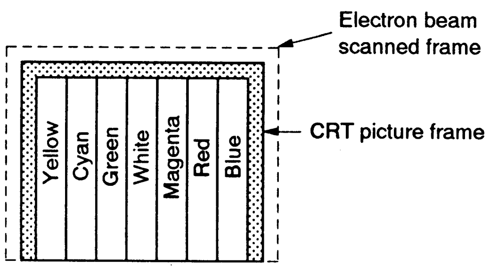


Fig. b (Picture on monitor TV)

(VIDEO, SERVO/SYSTEM CONTROL, LCD CONTROL, VIEW FINDER block)

- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

CD-92 (CCD IMAGER) PRINTED WIRING BOAR

— Ref. No. CD-92 BOARD: 1000 series —

- **For printed wiring boards.**
- CD-92 board is the printed wiring board which has structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side s the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen parts face are indicated.

〈 DIODE 〉

D875	8-719-800-76	DIODE 1SS123
D876	8-719-404-46	DIODE MA110
D877	8-719-820-05	DIODE 1SS181
D878	8-719-404-46	DIODE MA110

〈 TRANSISTOR 〉

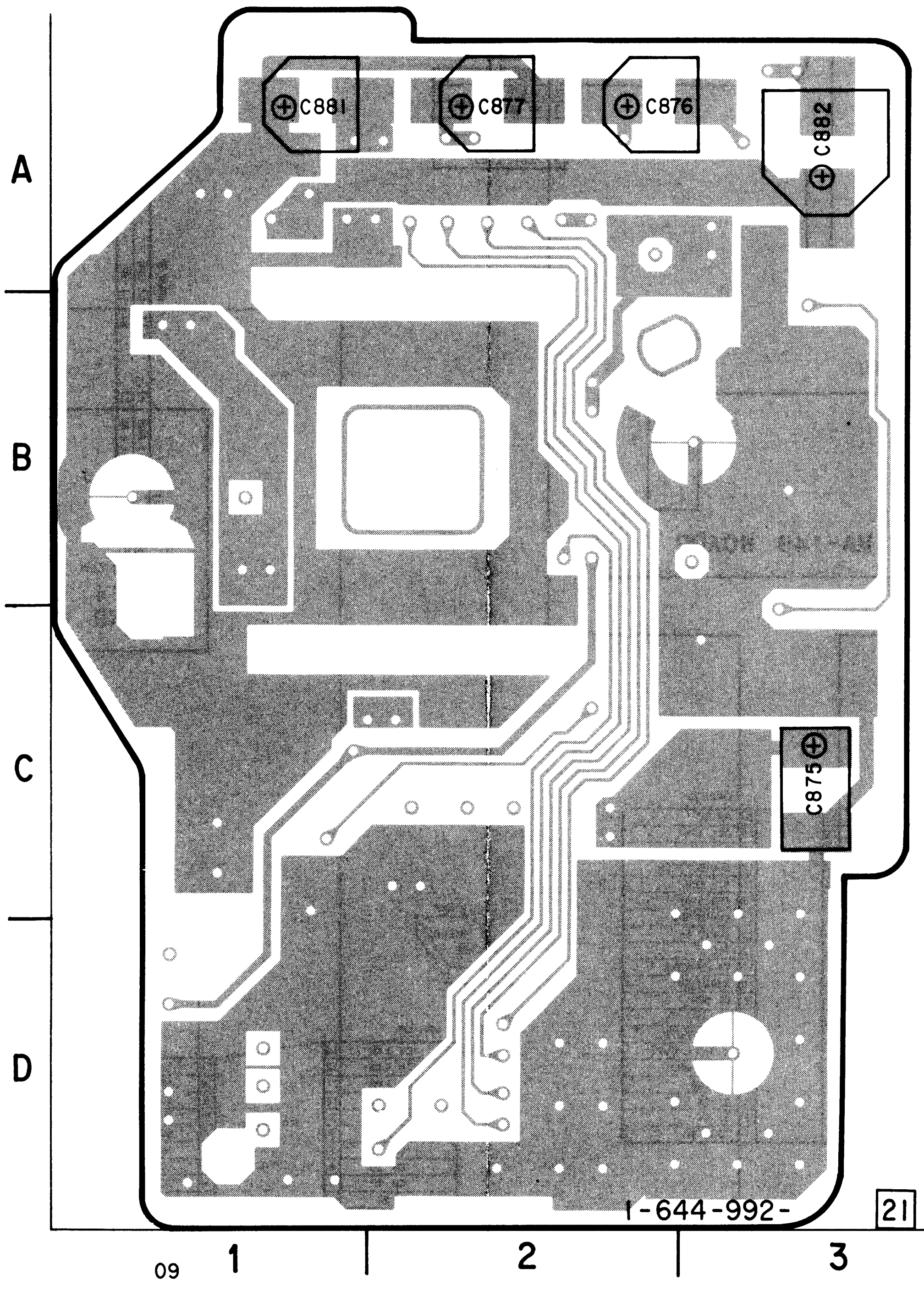
Q875	8-729-425-64	TRANSISTOR 2SD2216Q
Q876	8-729-427-72	TRANSISTOR XP4501
Q877	8-729-232-86	TRANSISTOR 2SK1875

OARD

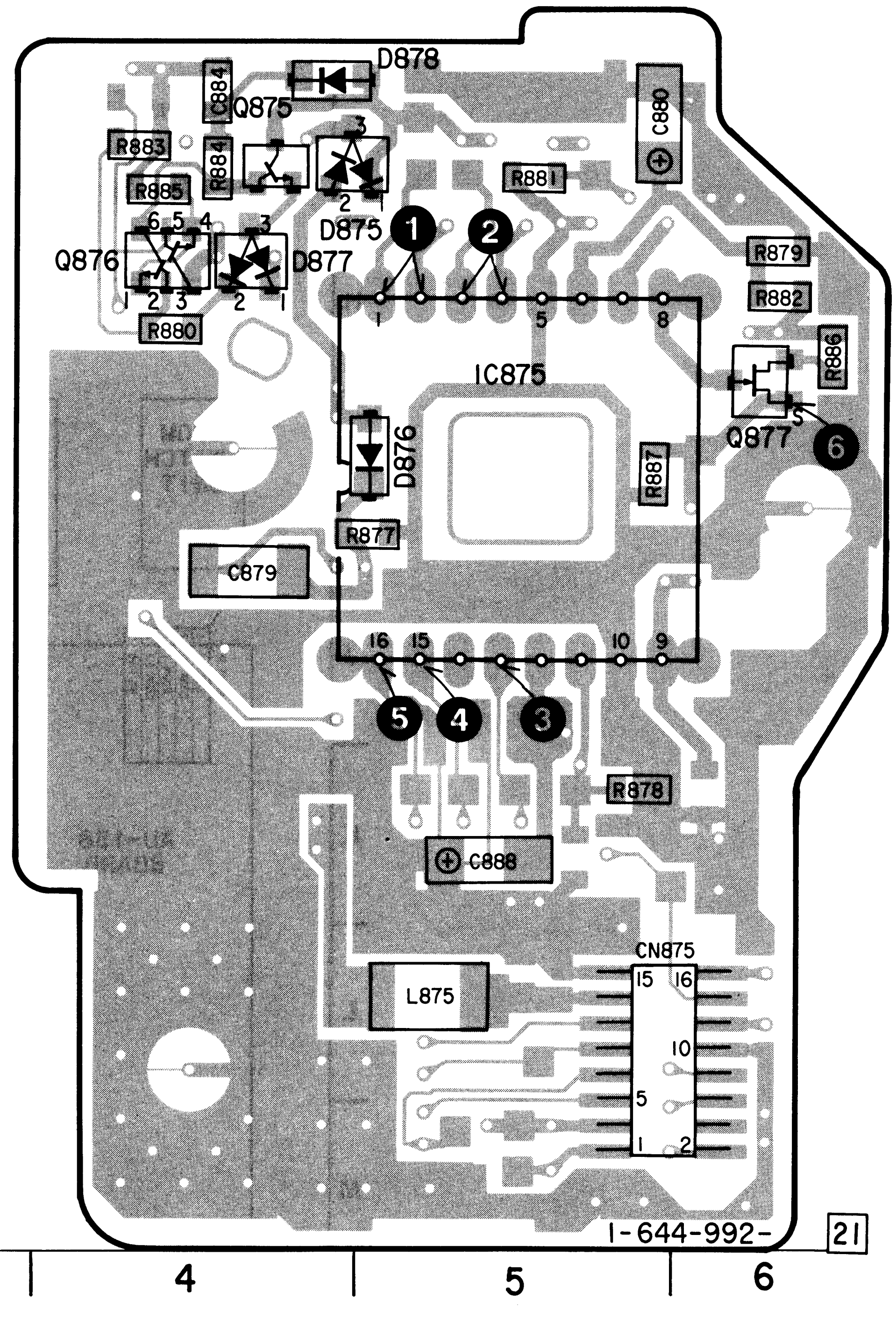
n has four layers
ed.

side seen from
ed.
e seen from the

CD-92 BOARD (COMPONENT SIDE)

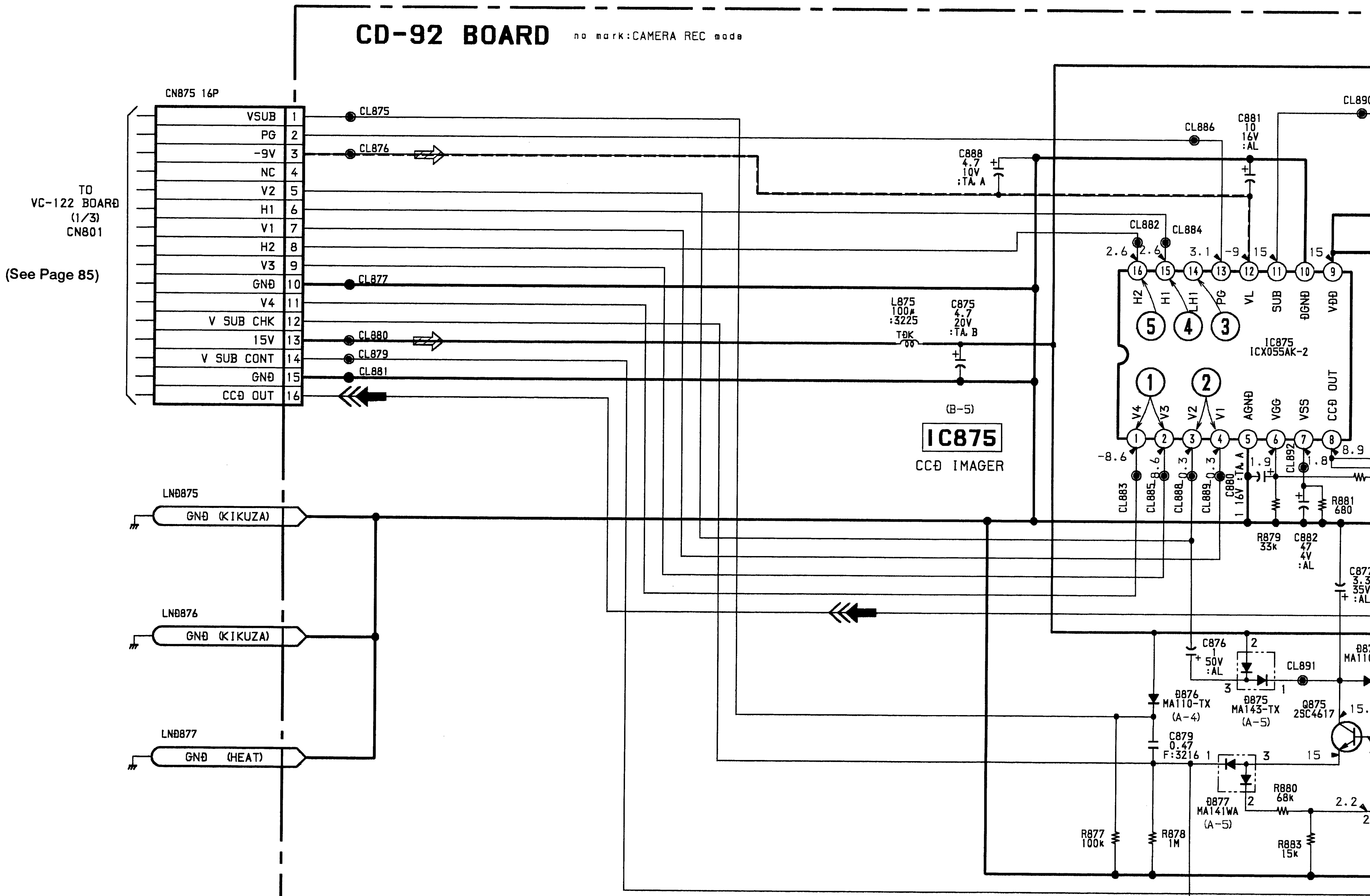

C881
C877
C876
C882
C875
1-644-992-
21
A
B
C
D
09
1
2
3

CD-92 BOARD (CONDUCTOR SIDE)

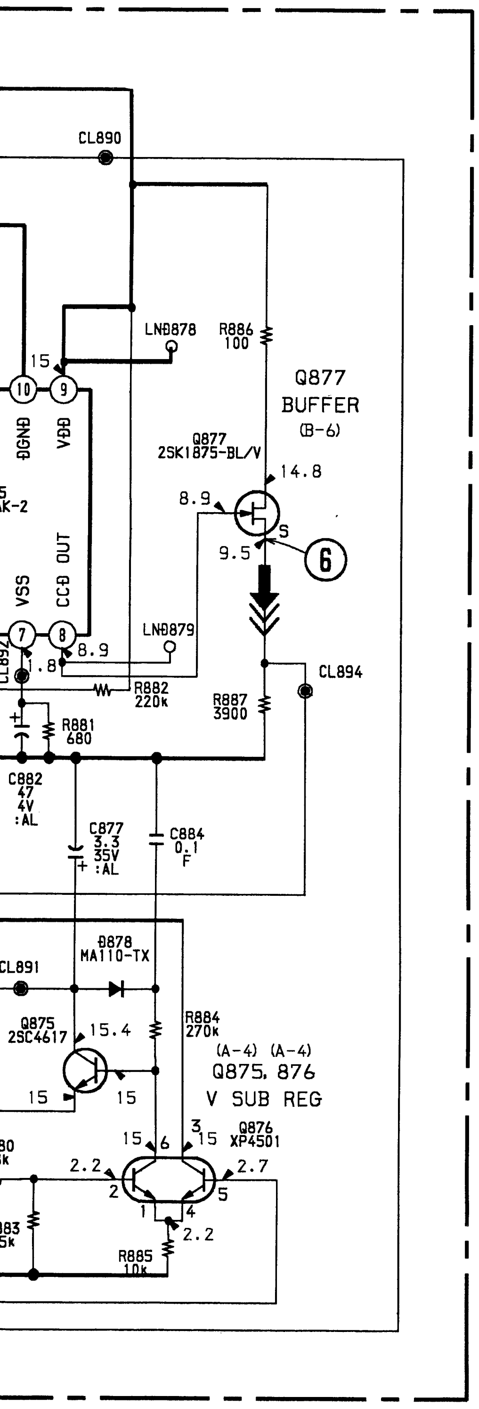

D878
C884
Q875
R883
R884
R885
R881
C880
D875
1
2
3
Q876
6 5 4
1 2 3
D877
2 1
R880
R879
R882
IC875
1
5
8
R886
Q877
S
6
D876
R887
R877
C879
16 15
10 9
5
4
3
R878
C888
CN875
15 16
10
5
1 2
L875
1-644-992-
21
4
5
6

CD-92 (CCD IMAGER) SCHEMATIC DIAGRAM

— Ref. No. CD-92 BOARD: 1000 series —


CD-92 BOARD
no mark:CAMERA REC mode
CN875 16P
VSUB 1
PG 2
-9V 3
NC 4
V2 5
H1 6
V1 7
H2 8
V3 9
GND 10
V4 11
V SUB CHK 12
15V 13
V SUB CONT 14
GND 15
CCD OUT 16
TO VC-122 BOARD (1/3) CN801
(See Page 85)
CL875
CL876
CL877
CL880
CL879
CL881
LND875 GND (KIKUZA)
LND876 GND (KIKUZA)
LND877 GND (HEAT)
C888 4.7 10V :TA, A
L875 100μ :3225 TDK
C875 4.7 20V :TA, B
(B-5)
IC875
CCD IMAGER
IC875 ICX055AK-2
CL886
C881 10 16V :AL
CL890
CL882
CL884
H2 H1 LH1 PG VL SUB DGND VDD
V4 V3 V2 V1 AGND VGG VSS CCD OUT
2.6 2.6 3.1 -9 15 15
-8.6 -8.6 0.3 0.3 1.9 1.8 8.9
CL883 CL885 CL888 CL889 C880 1 16V :TA, A CL892
R879 33k
C882 47 4V :AL
R881 680
C876 1 50V :AL
CL891
D876 MA110-TX (A-4)
D875 MA143-TX (A-5)
Q875 2SC4617
C879 0.47 F:3216
D877 MA141WA (A-5)
R880 68k
R883 15k
R877 100k
R878 1M
2.2
15
09

12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22


CL890
LND878
R886
100
15
10
9
DGND
VDD
Q877
BUFFER
(B-6)
Q877
2SK1875-BL/V
14.8
8.9
9.5
S
6
K-2
VSS
CCD OUT
7
8
8.9
1.8
LND879
CL892
R882
220k
CL894
R887
3900
R881
680
C882
47
4V
:AL
C877
3.3
35V
:AL
C884
0.1
F
D878
MA110-TX
CL891
Q875
2SC4617
15.4
R884
270k
(A-4) (A-4)
Q875, 876
V SUB REG
15
15
15
6
3
15
Q876
XP4501
2.2
2.7
2
5
1
4
2.2
R883
R885
10k

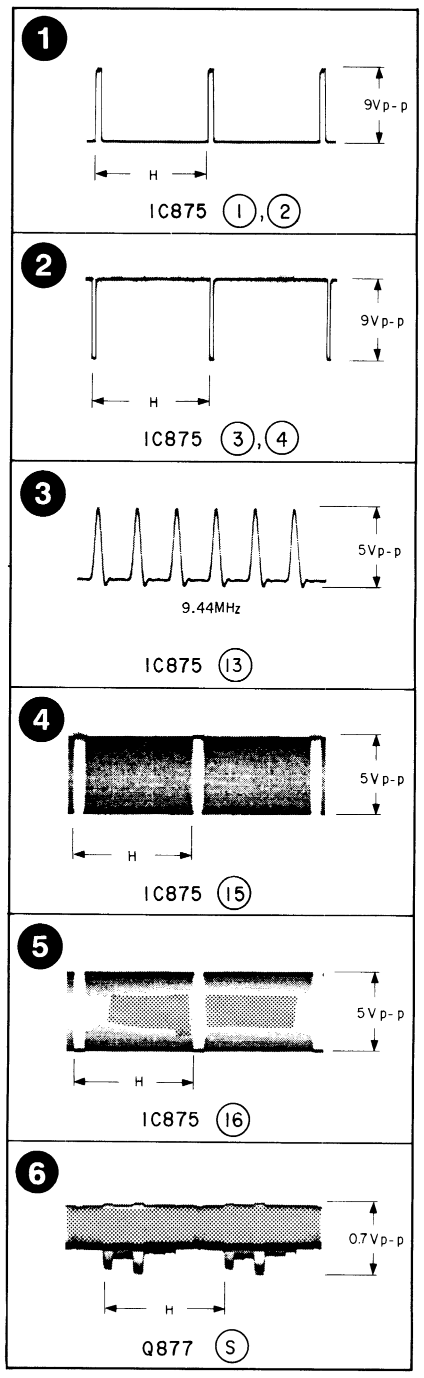
Note on the CCD imager replacement

- Some of this units require the correction data by the CCD imager (IC901 on CD-92 board), some do not.
  The correction data is input in F page and addresses 1D to 2C of the camera micro processor (IC709 on VC-122 board), and also written on the CCD data label put on the shield case (upper) of the DD-48 board.
  The correction data is not required for the CCD imager supplied for repair. Therefore, when replacing the CCD imager to which the CCD data label is put, remove the CCD data label and input 00 to F page and addresses 1D to 2C of the camera micro processor. Refer to the camera adjustment for input method.
- The CCD imager is not mounted for the already mounted CD-92 board supplied as the repair parts.
  When replacing the CD-92 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡≫	
PB				

CD-92 BOARD



VC-122 (CAMERA, LENS DRIVE) PRINTED WIRING BOARD

— Ref. No. VC-122 BOARD: 3000 series —

- **For printed wiring boards.**
- VC-122 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

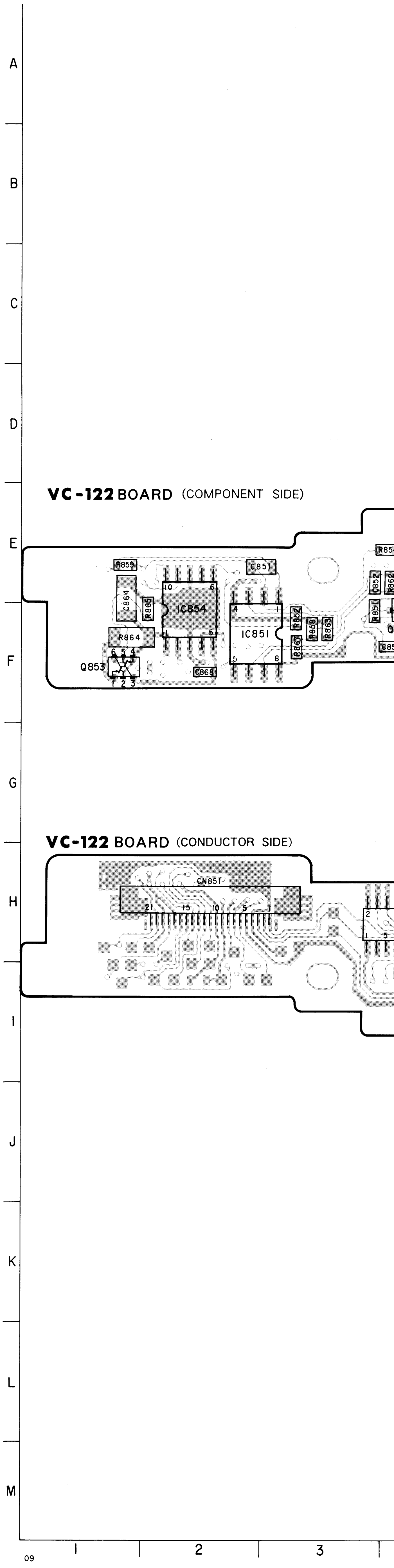
Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

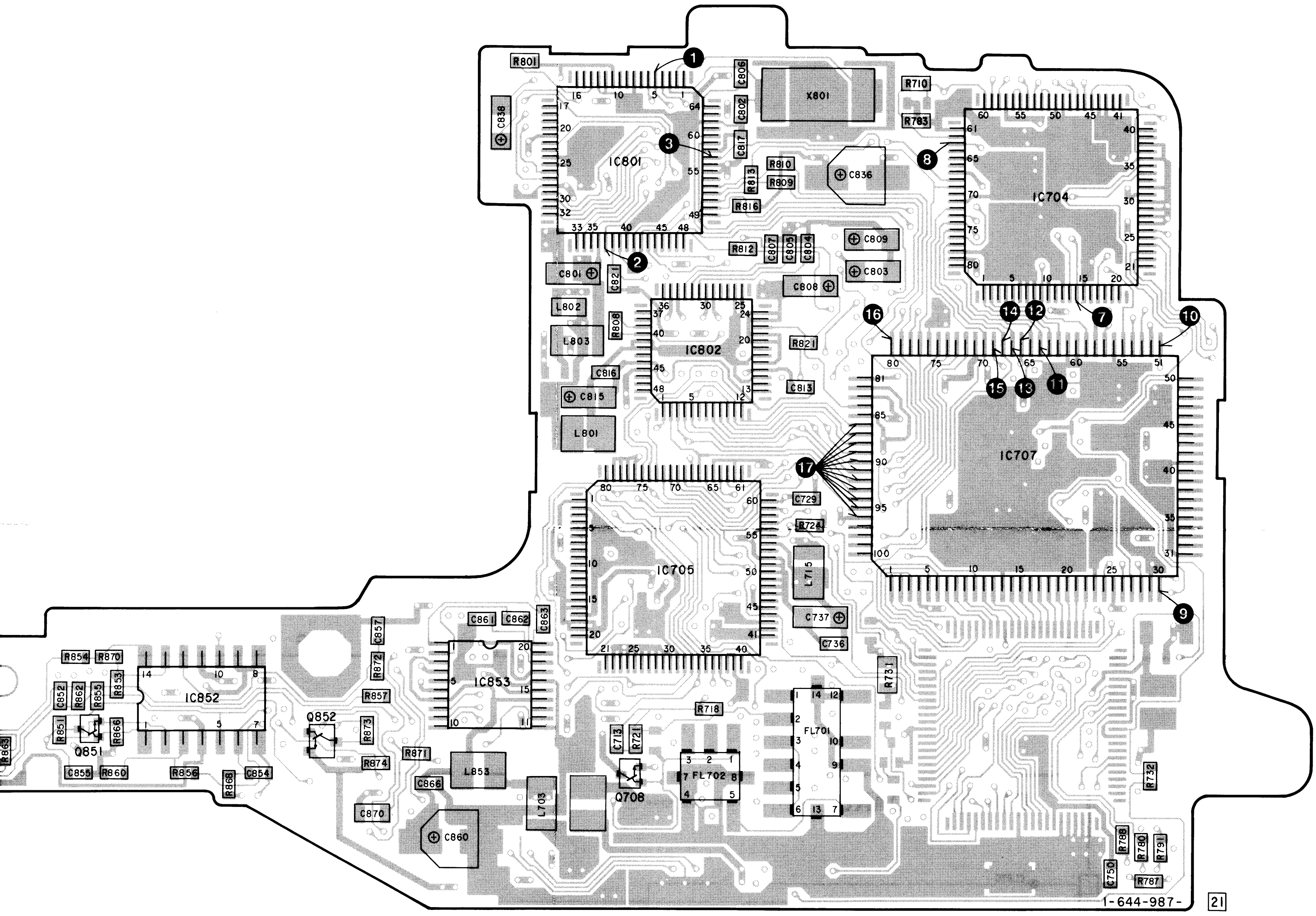
〈 IC 〉

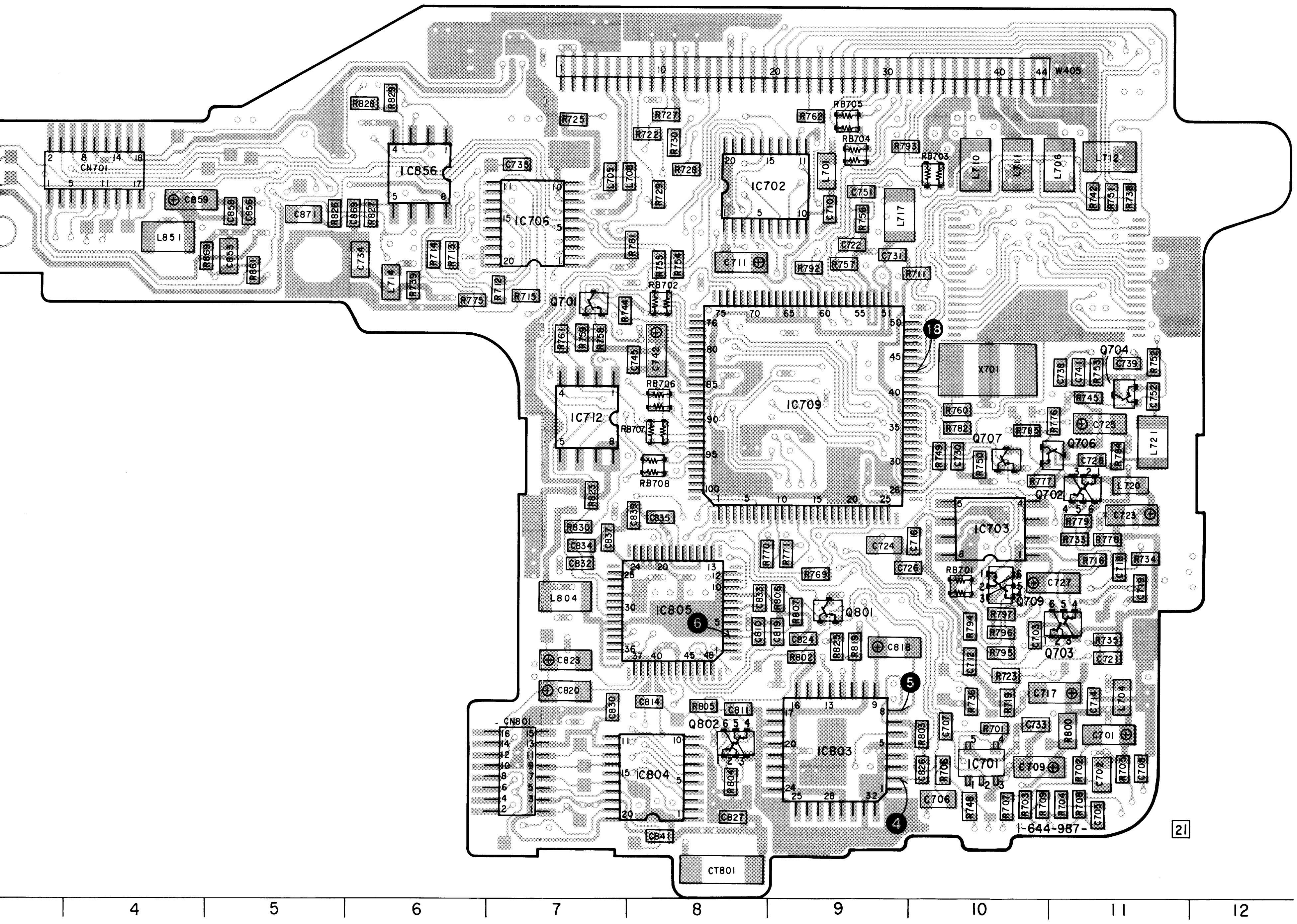
IC701	8-759-243-19	IC TC7SU04F
IC702	8-759-064-36	IC MB88346BPFV-EF
IC703	8-759-710-07	IC NJM2234M
IC704	8-752-348-92	IC CXD2101AR
IC705	8-759-063-18	IC CXD2103AR
IC706	8-752-355-56	IC CXD2104BN
IC707	8-752-347-93	IC CXD2100AQ
IC709	8-752-840-64	IC CXP80624-434R
IC712	8-759-073-67	IC BR9021AF
IC801	8-752-350-16	IC CXD1257AR
IC802	8-752-056-39	IC CXA1507BR
IC803	8-752-053-26	IC CXA1399Q
IC804	8-752-327-48	IC CXD1250N
IC805	8-752-054-61	IC CXA1390AR
IC851	8-759-701-24	IC NJM3414M
IC852	8-759-998-96	IC LM324D
IC853	8-759-058-47	IC MPC1724VMEL
IC854	8-759-823-51	IC LB1830M
IC856	8-759-998-98	IC LM358D

〈 TRANSISTOR 〉

Q701	8-729-928-87	TRANSISTOR DTC124EE
Q702	8-729-427-74	TRANSISTOR XP4601
Q703	8-729-427-74	TRANSISTOR XP4601
Q704	8-729-425-50	TRANSISTOR 2SB1462Q
Q706	8-729-425-64	TRANSISTOR 2SD2216Q
Q707	8-729-428-84	TRANSISTOR UN9111
Q708	8-729-425-64	TRANSISTOR 2SD2216Q
Q709	8-729-427-72	TRANSISTOR XP4501
Q801	8-729-425-64	TRANSISTOR 2SD2216Q
Q802	8-729-427-70	TRANSISTOR XP4401
Q851	8-729-425-64	TRANSISTOR 2SD2216Q
Q852	8-729-013-88	TRANSISTOR RN1302
Q853	8-729-427-70	TRANSISTOR XP4401


A
B
C
D
E
F
G
H
I
J
K
L
M
1
2
3
09
VC-122 BOARD (COMPONENT SIDE)
R859
C851
IC854
C864
R865
IC851
R852
R868
R863
R864
R867
Q853
C868
R851
C852
R862
VC-122 BOARD (CONDUCTOR SIDE)
CN851
21
15
10
5
1


R801
C838
IC801
X801
R710
R763
IC704
C806
C802
C817
R810
R809
R813
R816
C836
R812
C807
C805
C804
C809
C803
C801
C821
C808
L802
L803
R808
IC802
C816
C815
L801
R821
C813
IC707
IC705
C729
R724
L715
C737
C736
C861
C862
C863
C857
IC853
R854
R870
IC852
C852
R862
R855
R853
R851
Q851
R866
R872
R857
Q852
R873
R874
R871
C855
R860
R856
R868
C854
R863
C866
L853
C870
C860
L703
C713
R721
R718
Q708
FL702
FL701
R731
R732
R788
R780
R791
C750
R787
1-644-987-
21


W405
R828
R829
CN701
IC856
C735
R725
R727
R722
R730
R728
R729
L705
L708
IC706
R762
RB705
RB704
R793
RB703
L710
L711
L706
L712
IC702
L701
C710
C751
R756
L717
R742
R751
R738
C859
C858
C856
C871
R826
C869
R827
L851
R869
C853
R861
C734
L714
R739
R714
R713
R712
R715
R775
R781
R755
R754
RB702
C711
R792
R757
C722
C731
R711
Q701
R744
R761
R759
R758
C745
C742
RB706
IC712
RB707
RB708
IC709
X701
Q704
C738
C741
R733
C739
R752
R745
C752
R760
R782
Q707
R785
R776
C725
Q706
L721
R749
C730
R750
R777
C728
R784
Q702
L720
R779
C723
R778
R823
C839
C835
R830
C837
C834
C832
L804
IC805
R770
R771
R769
C724
C716
IC703
C726
RB701
C727
R716
C718
R734
C719
Q709
R797
R796
R795
Q703
C703
R794
R735
C721
C833
R806
R807
Q801
C810
C819
C824
R825
R819
C818
R802
C823
C820
C830
C814
R805
C811
Q802
R804
IC804
CN801
C841
C827
CT801
IC803
R803
C826
R706
C707
R736
R719
C712
R723
C717
C714
L704
R701
C733
R800
C701
IC701
C709
R702
C702
R705
C708
C706
R748
R707
R703
R709
R704
R708
C705
1-644-987-
21
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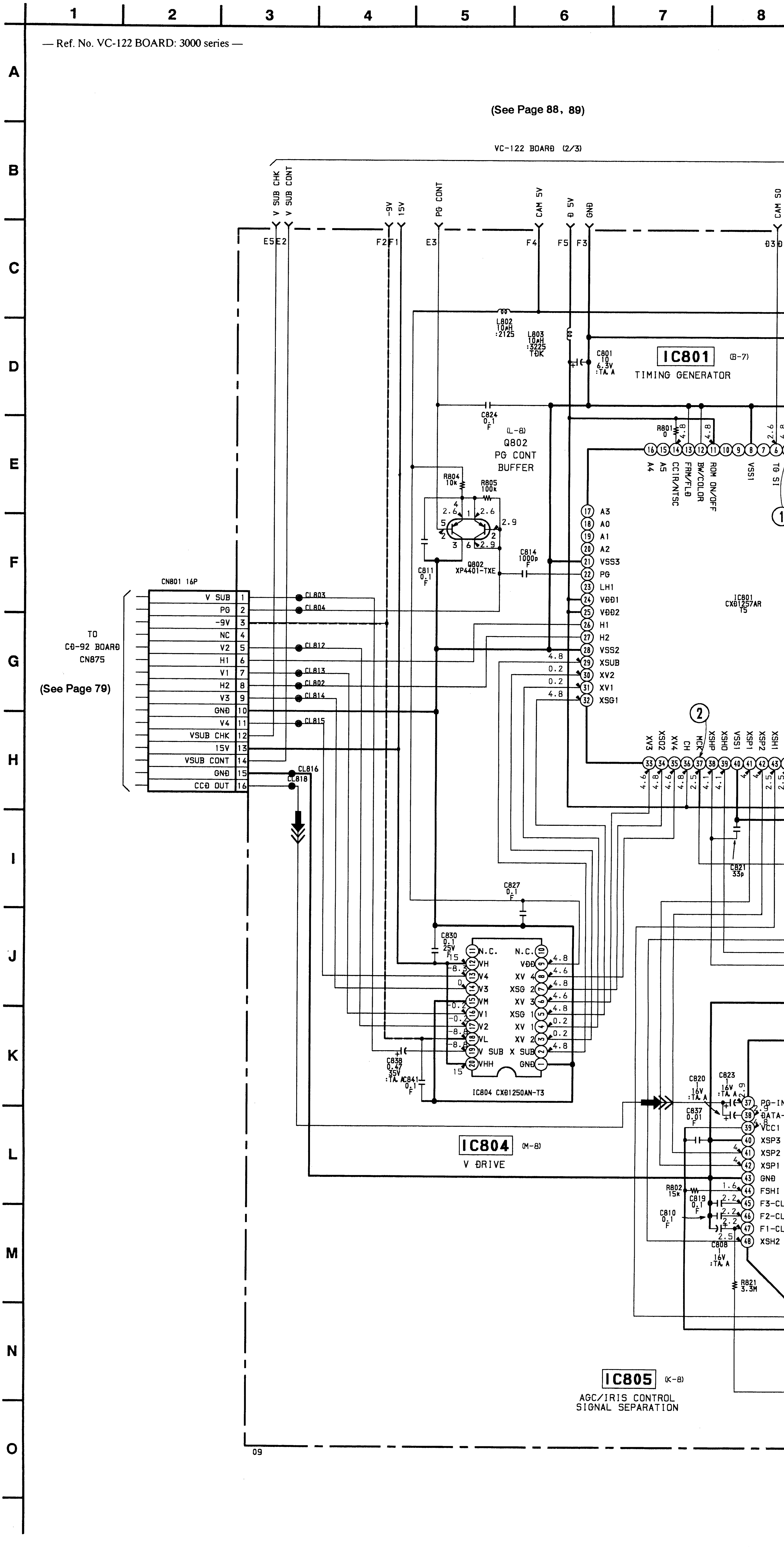
12

CAMERA CAMERA

VC-122 (CAMERA) SCHEMATIC DIAGRAM

• Refer to page 82 for Printed Wiring Board.


1
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A
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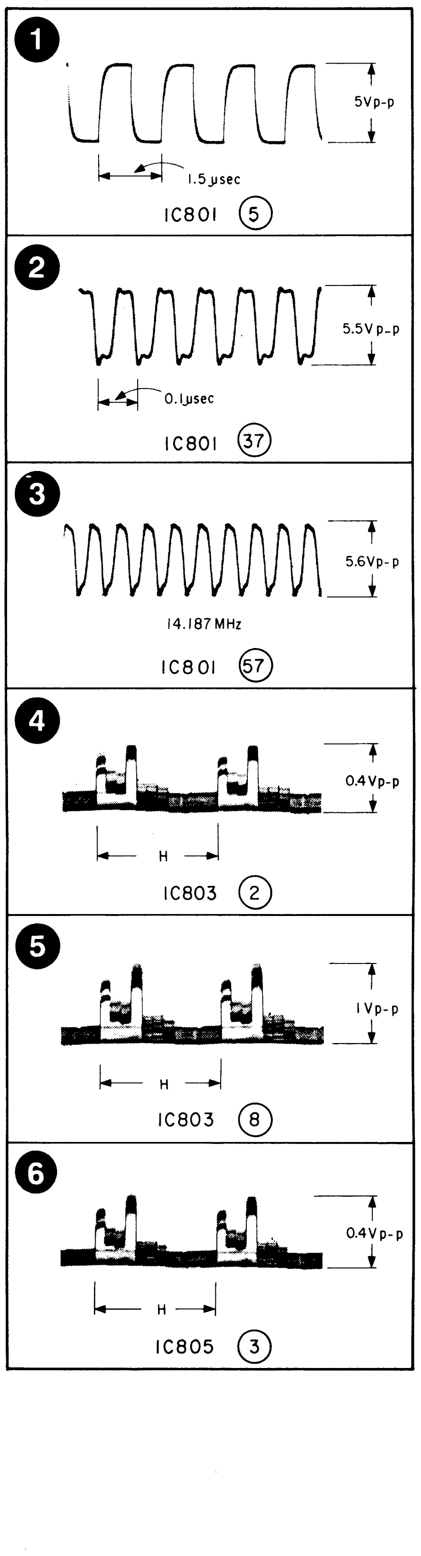
N
O
— Ref. No. VC-122 BOARD: 3000 series —
(See Page 88, 89)
VC-122 BOARD (2/3)
V SUB CHK
V SUB CONT
-9V
15V
PG CONT
CAM 5V
D 5V
GND
CAM SO
IC801 (B-7)
TIMING GENERATOR
Q802 (L-8)
PG CONT BUFFER
XP4401-TXE
IC801 CXD1257AR
CN801 16P
TO CD-92 BOARD CN875
(See Page 79)
V SUB
PG
-9V
NC
V2
H1
V1
H2
V3
GND
V4
VSUB CHK
15V
VSUB CONT
GND
CCD OUT
IC804 CXD1250AN-T3
IC804 (M-8)
V DRIVE
IC805 (K-8)
AGC/IRIS CONTROL
SIGNAL SEPARATION
09

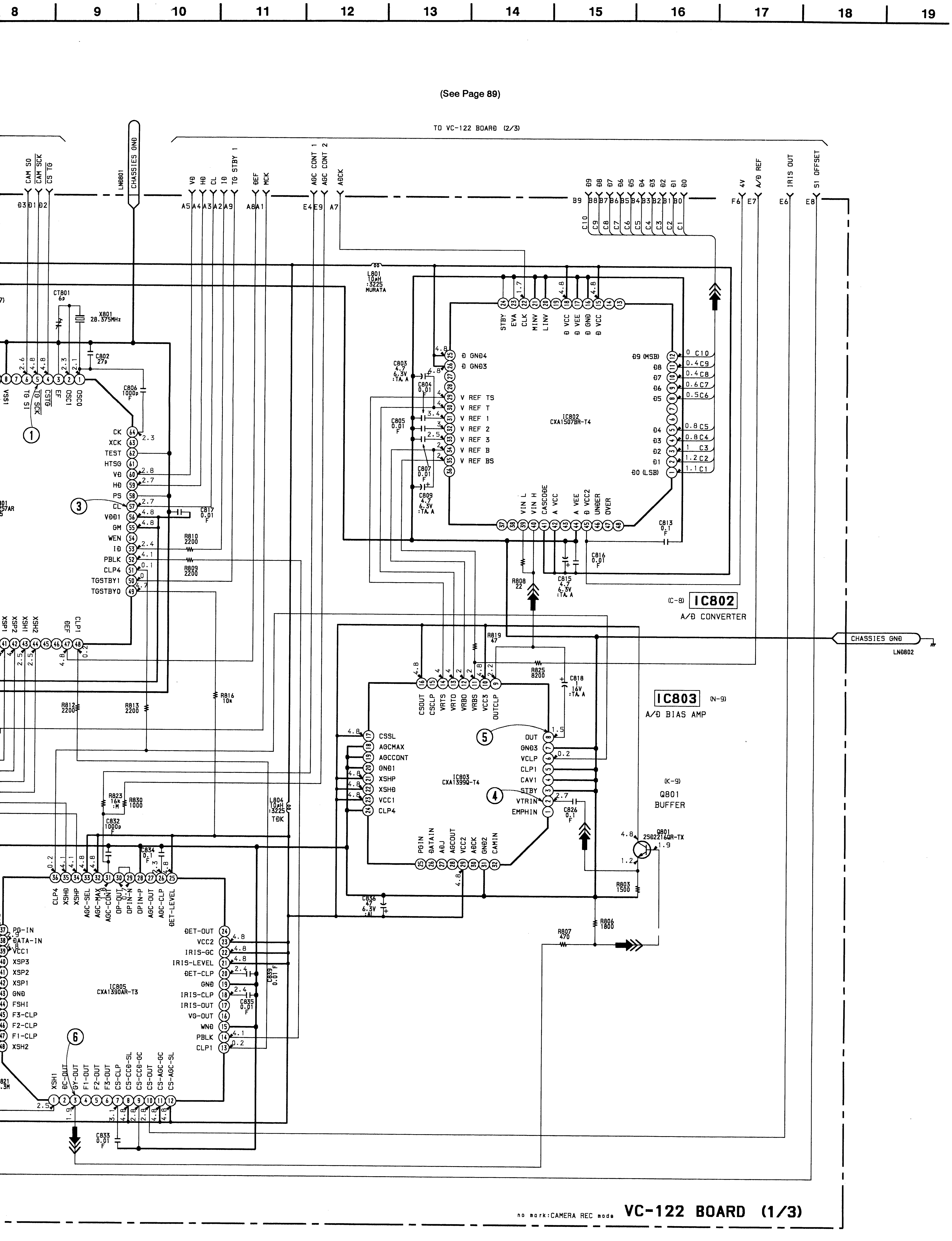
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡≫	
PB				

VC-122 BOARD (1/3)



(See Page 89)


8
9
10
11
12
13
14
15
16
17
18
19
TO VC-122 BOARD (2/3)
CAM SO
CAM SCK
CS TG
CHASSIES GND
LND801
VD
HD
CL
ID
TG STBY 1
DEF
MCK
AGC CONT 1
AGC CONT 2
ADCK
D9
D8
D7
D6
D5
D4
D3
D2
D1
D0
4V
A/D REF
IRIS OUT
S1 OFFSET
L801 10μH :3225 MURATA
CT801 6p
X801 28.375MHz
C802 27p
C806 1000p F
C803 4.7 6.3V :TA A
C804 0.01 F
C805 0.01 F
C807 0.01 F
C809 4.7 6.3V :TA A
C813 0.1 F
C816 0.01 F
C815 4.7 6.3V :TA A
R808 22
R810 2200
R809 2200
C817 0.01 F
IC802 CXA1507BR-T4
(C-8) IC802
A/D CONVERTER
CHASSIES GND
LND802
R819 47
R825 8200
C818 1 16V :TA A
IC803 (N-9)
A/D BIAS AMP
IC803 CXA1399Q-T4
C826 0.1 F
(K-9)
Q801
BUFFER
Q801 2SD2216QR-TX
R803 1500
R806 1800
R807 470
C836 47 6.3V :AL
R812 2200
R813 2200
R816 10k
R823 16k :M
R830 1000
C832 1000p F
L804 10μH :3225 TDK
C834 0.1 F
C839 0.01 F
C835 0.01 F
IC805 CXA1390AR-T3
C833 0.01 F
①
③
④
⑤
⑥

no mark:CAMERA REC mode **VC-122 BOARD (1/3)**

VC-122 (CAMERA) SCHEMATIC DIAGRAM

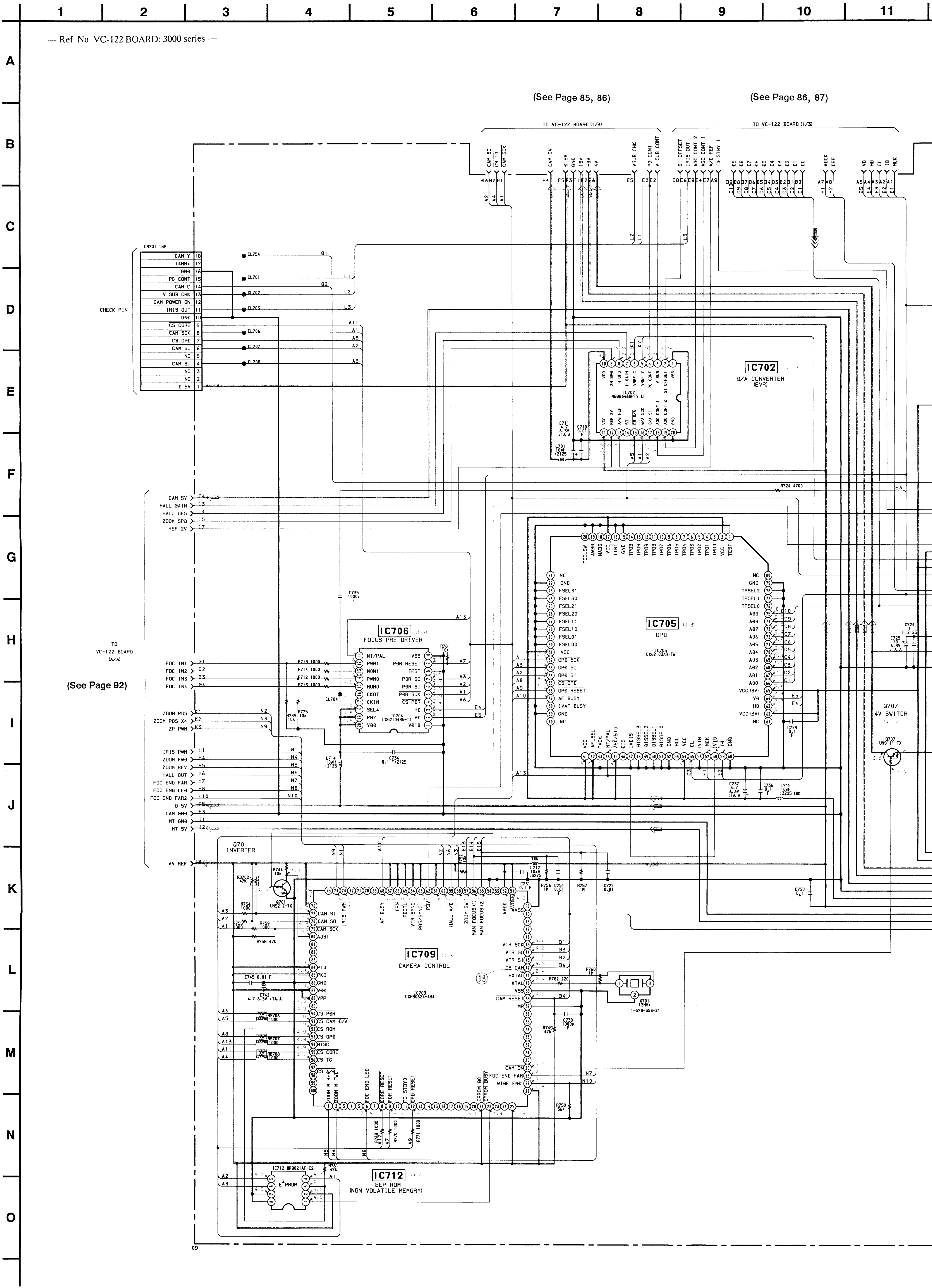
- Refer to page 82 for Printed Wiring Board.

— Ref. No. VC-122 BOARD: 3000 series —

(See Page 85, 86)

(See Page 86, 87)

(See Page 92)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A
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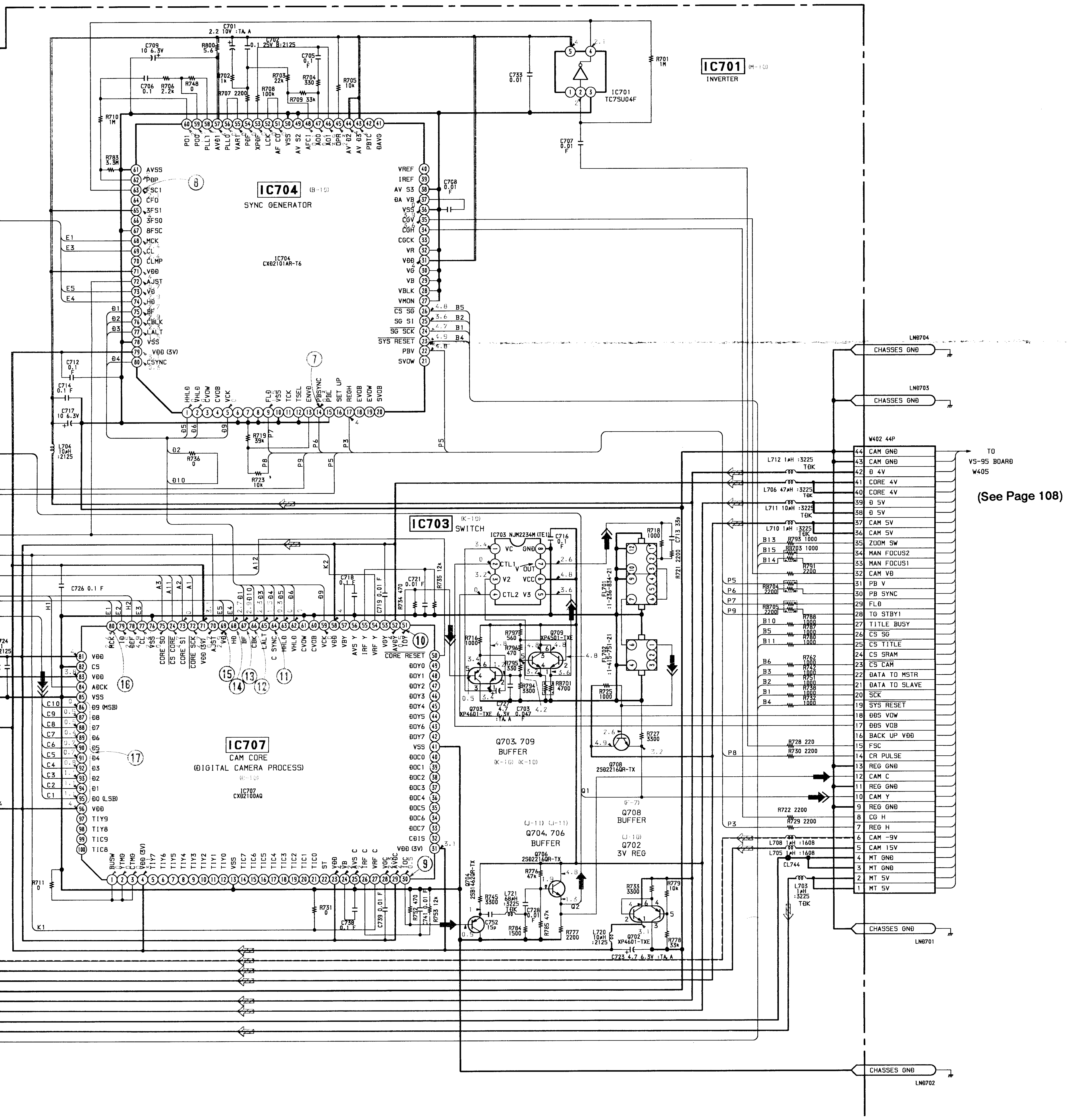
J
K
L
M
N
O
TO VC-122 BOARD (1/3)
TO VC-122 BOARD (1/3)
CAM SO
CS TG
CAM SCK
CAM 5V
D 5V
GND
15V
-5V
4V
VSUB CHK
PG CONT
V SUB CONT
S1 OFFSET
IRIS OUT
AGC CONT 2
AGC CONT 1
A/D REF
TG STBY 1
D9
D8
D7
D6
D5
D4
D3
D2
D1
D0
ADCK
DEF
VD
HD
CL
ID
MCK
CN701 18P
CHECK PIN
CAM Y
14MHz
GND
PG CONT
CAM C
V SUB CHK
CAM POWER ON
IRIS OUT
GND
CS CORE
CAM SCK
CS OPD
CAM SO
NC
CAM SI
NC
NC
D 5V
CL754
CL701
CL702
CL703
CL706
CL707
CL708
IC702
D/A CONVERTER (EVR)
IC702 MB88346BPFV-EF
C711 4.7 6.3V :TA A
C710 0.01 F
L701 10μH :2125
R724 4700
CAM 5V
HALL GAIN
HALL OFS
ZOOM SPD
REF 2V
TO VC-122 BOARD (3/3)
FOC IN1
FOC IN2
FOC IN3
FOC IN4
ZOOM POS
ZOOM POS X4
ZP PWM
IRIS PWM
ZOOM FWD
ZOOM REV
HALL OUT
FOC END FAR
FOC END LED
FOC END FAR2
D 5V
CAM GND
MT GND
MT 5V
AV REF
C735 1000p F
IC706
FOCUS PRE DRIVER
IC706 CXD2104BN-T4
NT/PAL
PWM1
MON1
PWM0
MON0
CKOT
CKIN
SEL4
PH2
VDD
VSS
PDR RESET
TEST
PDR SO
PDR SI
PDR SCK
CS PDR
HD
VD
VD10
R715 1000
R714 1000
R712 1000
R713 1000
R739 10k
R775 10k
R781 10k
CL704
L714 10μH :2125
C734 0.1 F:2125
IC705
OPD
IC705 CXD2103AR-T6
FSELSW
AWBD
NABS
VCC
TINT
GND
TPOD
TPDR
TPD9
TPD8
TPD7
TPD6
TPD5
TPD4
TPD3
TPD2
TPD1
TPD0
TEST
NC
FSEL31
FSEL30
FSEL21
FSEL20
FSEL11
FSEL10
FSEL01
FSEL00
OPD SCK
OPD SO
OPD SI
CS OPD
OPD RESET
AF BUSY
IVAF BUSY
TPSEL2
TPSEL1
TPSEL0
AD9
AD8
AD7
AD6
AD5
AD4
AD3
AD2
AD1
AD0
VCC (3V)
VD
HD
AFLSEL
TVCK
NT/PAL
76D/S10
D1S
IVD1S
D1SSEL3
D1SSEL2
D1SSEL1
D1SSEL0
HCL
CL
IVIN
MCK
CVID
ID
C737 4.7 6.3V :TA A
C736 0.1 F
L715 10μH :3225 T0K
C724 F:2125
C725 10 6.3V :TA A
C729 0.1 F
Q707 4V SWITCH
Q707 UN9111-TX
Q701 INVERTER
Q701 UN9212-TX
R744 10k
RB702 47K
R754 1000
R755 1000
R759 1000
R758 47k
IC709
CAMERA CONTROL
IC709 CXP80624-434
CAM SI
CAM SO
CAM SCK
AJST
PIO
PKO
GND
VDD
VPP
CS PDR
CS CAM D/A
CS ROM
CS OPD
NTSC
CS CORE
CS TG
CS A/D
ZOOM M REV
ZOOM M FWD
FOC END LED
CORE RESET
PDR RESET
TG STBYO
OPD RESET
EPROM DO
EPROM BUSY
IRIS PWM
AF BUSY
OPD
PBCTL
VTR SYNC
PG5/SYNC
PBV
HALL A/D
ZOOM SW
MAN FOCUS (1)
MAN FOCUS (2)
AVDD
AVREF
AVSS
VTR SCK
VTR SO
VTR SI
CS CAM
EXTAL
XTAL
VSS
CAM RESET
MP
CAM ON
FOC END FAR
WIDE END
C745 0.01 F
C742 4.7 6.3V :TA A
RB706 1000
RB707 1000
RB708 1000
L717 10μH :3225
C731 0.1 F
R756 1M
C751 0.01 F
R757 1M
C722 0.01 F
C750 0.1 F
R760 1M
R782 220
X701 12MHz 1-579-553-21
C730 1000p F
R749 47k
R750 56k
R769 1000
R770 1000
R771 1000
R761 47k
IC712
EEP ROM (NON VOLATILE MEMORY)
IC712 BR9021AF-E2
E2PROM
09


IC701 INVERTER
IC701 TC7SU04F
IC704 SYNC GENERATOR
IC704 CXD2101AR-T6
IC703 SWITCH
IC703 NJM2234M (TE1)
IC707 CAM CORE (DIGITAL CAMERA PROCESS)
IC707 CXD2100AQ
Q703, 709 BUFFER
Q704, 706 BUFFER
Q708 BUFFER
Q702 3V REG
CHASSES GND
LN0704
LN0703
LN0701
LN0702
W402 44P
TO VS-95 BOARD W405
(See Page 108)
44 CAM GND
43 CAM GND
42 D 4V
41 CORE 4V
40 CORE 4V
39 D 5V
38 D 5V
37 CAM 5V
36 CAM 5V
35 ZOOM SW
34 MAN FOCUS2
33 MAN FOCUS1
32 CAM VD
31 PB V
30 PB SYNC
29 FLD
28 TG STBY1
27 TITLE BUSY
26 CS SG
25 CS TITLE
24 CS SRAM
23 CS CAM
22 DATA TO MSTR
21 DATA TO SLAVE
20 SCK
19 SYS RESET
18 DDS VDW
17 DDS VDB
16 BACK UP VDD
15 FSC
14 CR PULSE
13 REG GND
12 CAM C
11 REG GND
10 CAM Y
9 REG GND
8 CG H
7 REG H
6 CAM -9V
5 CAM 15V
4 MT GND
3 MT GND
2 MT 5V
1 MT 5V

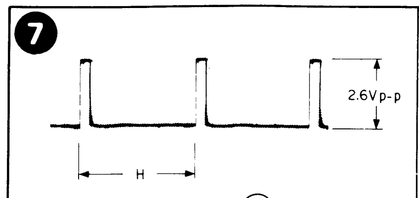
no mark:CAMERA REC mode

VC-122 BOARD (2/3)

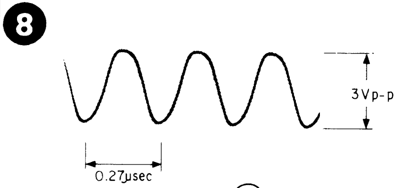
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	⇛	⇛	
PB				

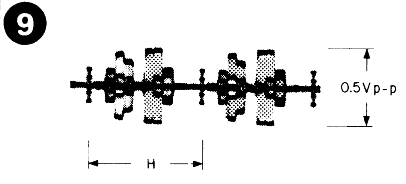
VC-122 BOARD (2/3)

❼


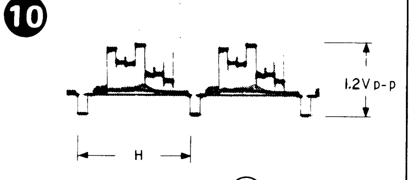
IC704 ⑭

❽


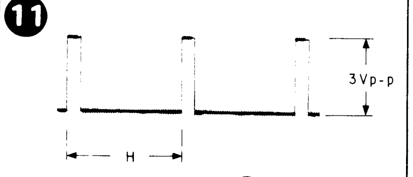
IC704 (63)

❾


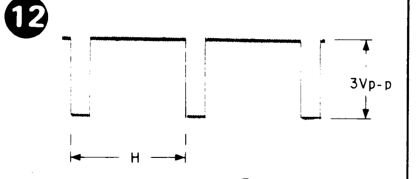
IC707 ㉚

❿


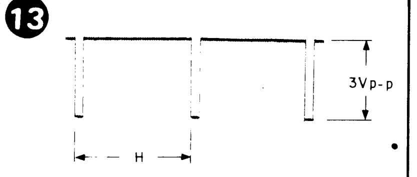
IC707 (51)

⓫


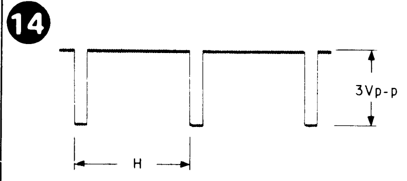
IC707 (64)

⓬


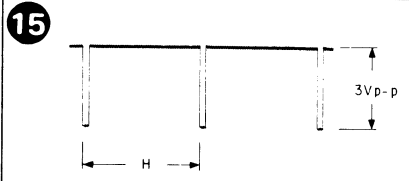
IC707 (66)

⓭


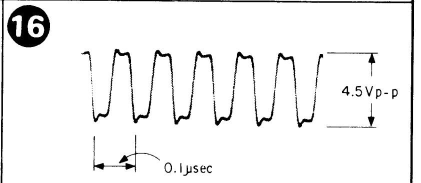
IC707 (67)

⓮


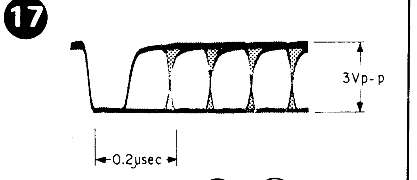
IC707 (68)

⓯


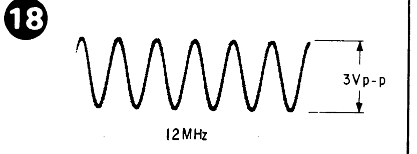
IC707 (69)

⓰


IC707 (80)

⓱


IC707 (86) - (95)

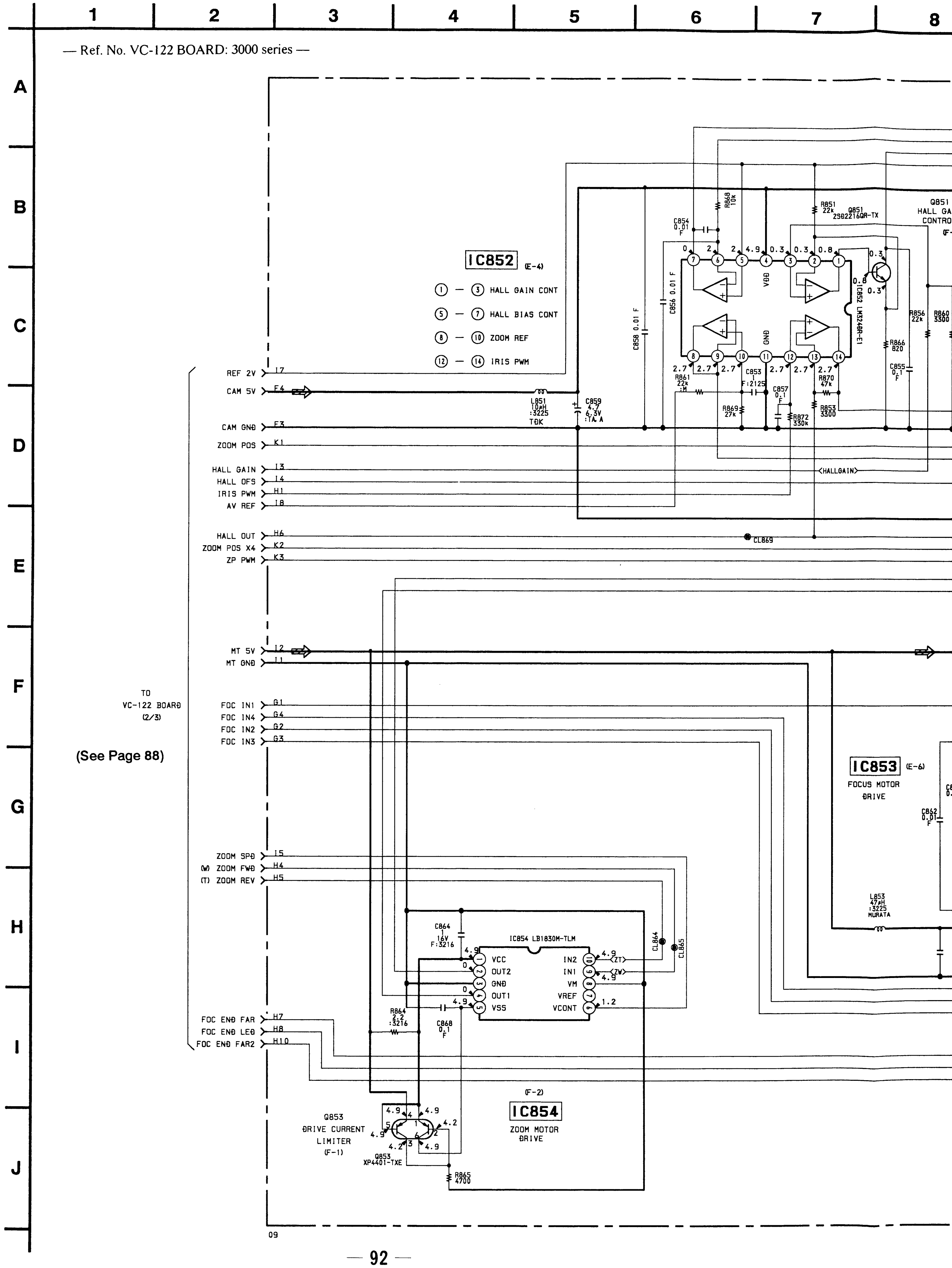
⓲


IC709 ㊶

VC-122 (LENS DRIVE) SCHEMATIC DIAGRAM

• Refer to page 82 for Printed Wiring Board.

— Ref. No. VC-122 BOARD: 3000 series —


1
2
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A
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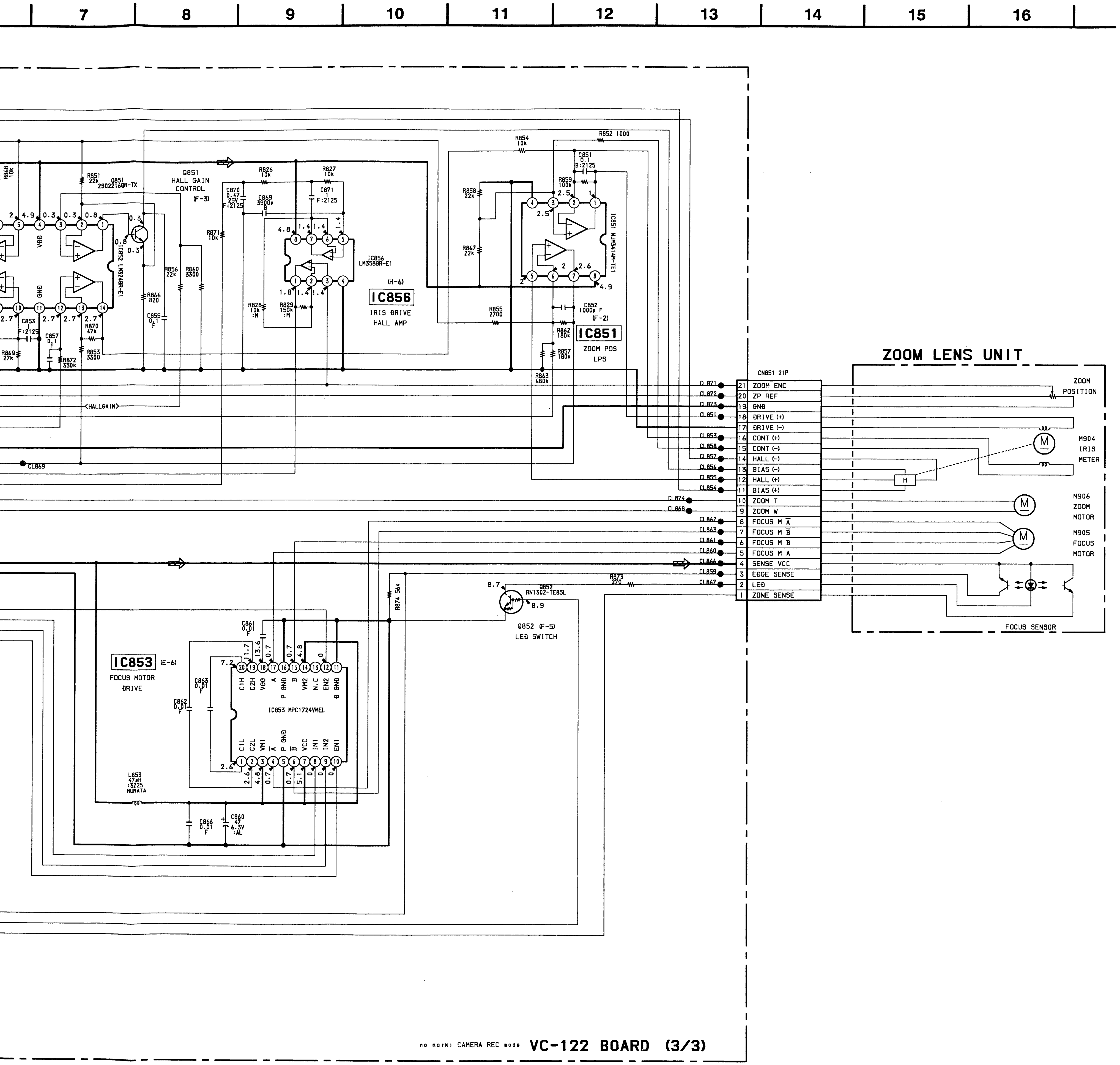
I
J
IC852 (E-4)
① – ③ HALL GAIN CONT
⑤ – ⑦ HALL BIAS CONT
⑧ – ⑩ ZOOM REF
⑫ – ⑭ IRIS PWM
REF 2V I7
CAM 5V F4
CAM GND F3
ZOOM POS K1
HALL GAIN I3
HALL OFS I4
IRIS PWM H1
AV REF I8
HALL OUT H6
ZOOM POS X4 K2
ZP PWM K3
MT 5V I2
MT GND I1
FOC IN1 G1
FOC IN4 G4
FOC IN2 G2
FOC IN3 G3
ZOOM SPD I5
(W) ZOOM FWD H4
(T) ZOOM REV H5
FOC END FAR H7
FOC END LED H8
FOC END FAR2 H10
TO VC-122 BOARD (2/3)
L851 10μH :3225 TDK
C859 4.7 6.3V :TA A
C858 0.01 F
C856 0.01 F
C854 0.01 F
R868 10k
R851 22k
Q851 2SD2216QR-TX
Q851 HALL GA
CONTRO
IC852 LM324AR-E1
VDD
GND
R856 22k
R860 3300
R866 820
C855 F
R861 22k
R869 27k
C853 F:2125
C857 0.1 F
R872 330k
R870 47k
R853 3300
<HALLGAIN>
CL869
IC853 (E-6)
FOCUS MOTOR DRIVE
C862 0.01 F
L853 47μH :3225 MURATA
C864 1 16V F:3216
IC854 LB1830M-TLM
VCC
OUT2
GND
OUT1
VSS
IN2
IN1
VM
VREF
VCONT
<ZT>
<ZW>
CL864
CL865
R864 2.2 :3216
C868 0.1 F
IC854 (F-2)
ZOOM MOTOR DRIVE
Q853 DRIVE CURRENT LIMITER (F-1)
Q853 XP4401-TXE
R865 4700
09

(See Page 88)


7
8
9
10
11
12
13
14
15
16
Q851
HALL GAIN
CONTROL
(F-3)
Q851
2SD2216QR-TX
IC852 LM324QR-E1
IC856
LM358QR-E1
(H-6)
IC856
IRIS DRIVE
HALL AMP
IC851 NJM3414M-TE1
IC851
(F-2)
ZOOM POS
LPS
<HALLGAIN>
CL869
CN851 21P
21 ZOOM ENC
20 ZP REF
19 GND
18 DRIVE (+)
17 DRIVE (−)
16 CONT (+)
15 CONT (−)
14 HALL (−)
13 BIAS (−)
12 HALL (+)
11 BIAS (+)
10 ZOOM T
9 ZOOM W
8 FOCUS M A̅
7 FOCUS M B̅
6 FOCUS M B
5 FOCUS M A
4 SENSE VCC
3 EDGE SENSE
2 LED
1 ZONE SENSE
ZOOM LENS UNIT
ZOOM
POSITION
M904
IRIS
METER
N906
ZOOM
MOTOR
M905
FOCUS
MOTOR
FOCUS SENSOR
H
M
Q852
RN1302-TE85L
Q852 (F-5)
LED SWITCH
IC853
(E-6)
FOCUS MOTOR
DRIVE
IC853 MPC1724VMEL
C1H C2H VGG A P GND B VM2 N.C EN2 D GND
C1L C2L VM1 A̅ P GND B̅ VCC IN1 IN2 EN1
L853
47μH
:3225
MURATA
R852 1000
R854 10k
R826 10k
R827 10k
R851 22k
R868 10k
R856 22k
R860 3300
R866 820
R870 47k
R853 3300
R872 330k
R869 27k
R871 10k
R828 10k
R829 150k
R855 2700
R858 22k
R867 22k
R859 100k
R862 180k
R857 180k
R863 680k
R873 270
R874 56k
C851 0.1 B:2125
C852 1000p F
C853 F:2125
C857 0.1 F
C859 0.1 F
C869 3900p B
C870 0.47 25V F:2125
C871 1 F:2125
C861 0.01 F
C862 0.01 F
C863 0.01 F
C866 0.01 F
C860 47 6.3V :AL

no mark: CAMERA REC mode VC-122 BOARD (3/3)

VS-95 (REC/PB HEAD AMP, VIDEO, SERVO/SYSTEM CONTROL) PRINTED WIRING BOARD

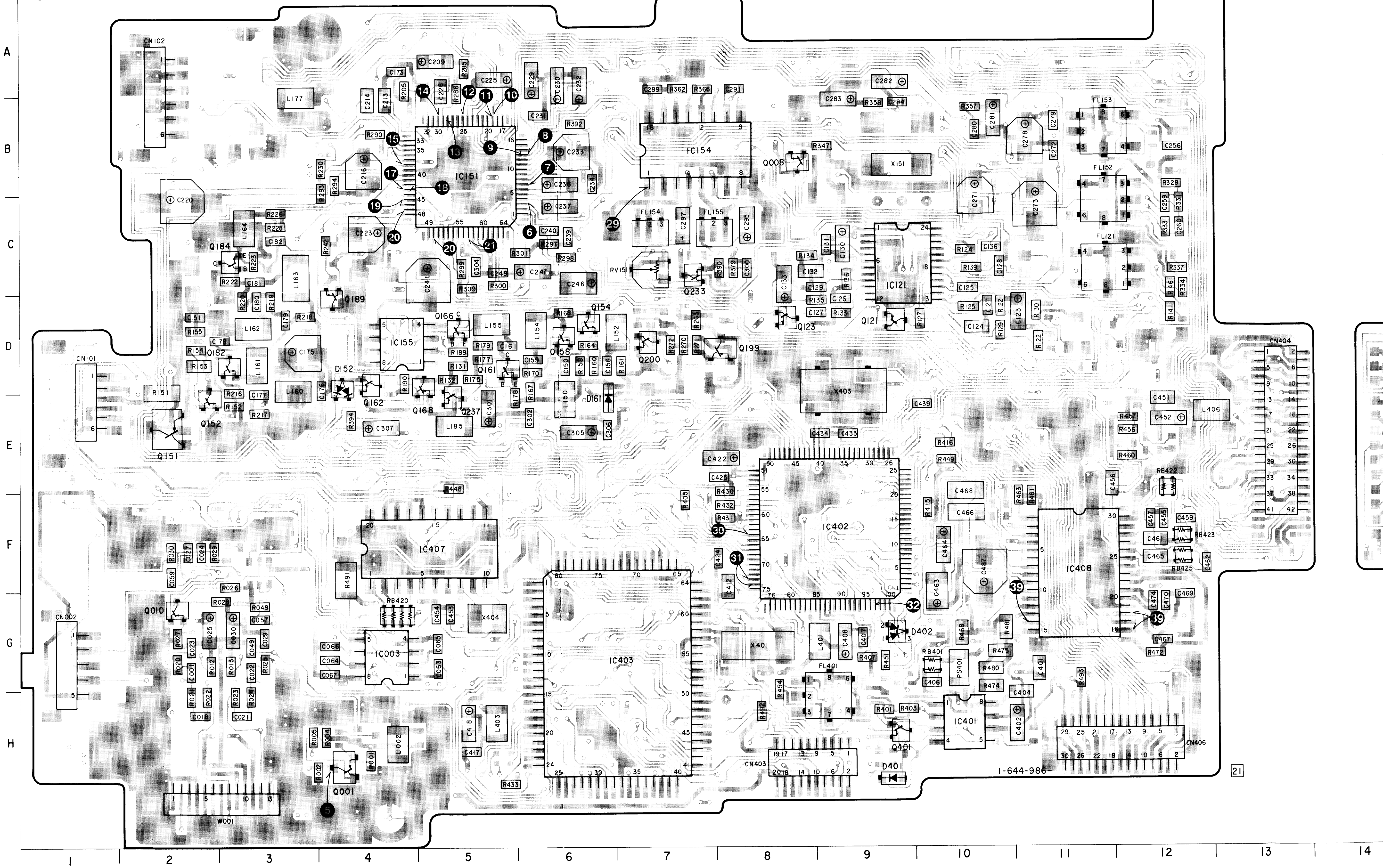
— Ref. No. VS-95 BOARD: 4000 series —

- **For printed wiring boards.**
- VS-95 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

VS-95 BOARD(COMPONENT SIDE)


A
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12
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14
CN102
CN101
CN002
CN404
CN403
CN406
W001
IC151
IC154
IC155
IC121
IC402
IC403
IC407
IC408
IC003
IC401
Q184
Q189
Q182
Q152
Q151
Q166
Q161
Q162
Q168
Q237
Q158
Q154
Q200
Q199
Q233
Q008
Q123
Q121
Q010
Q001
Q401
D152
D161
D402
D401
X151
X403
X401
X404
RV151
FL153
FL152
FL121
FL154
FL155
FL401
L177
L164
L163
L162
L161
L160
L155
L154
L152
L150
L185
L401
L403
L002
L406
RB420
RB401
RB422
RB423
RB425
PS401
C220
C209
C225
C229
C230
C232
C233
C236
C237
C240
C246
C247
C248
C305
C307
C422
C439
C451
C452
C468
C466
R151
R448
R491
R433
1-644-986-
21
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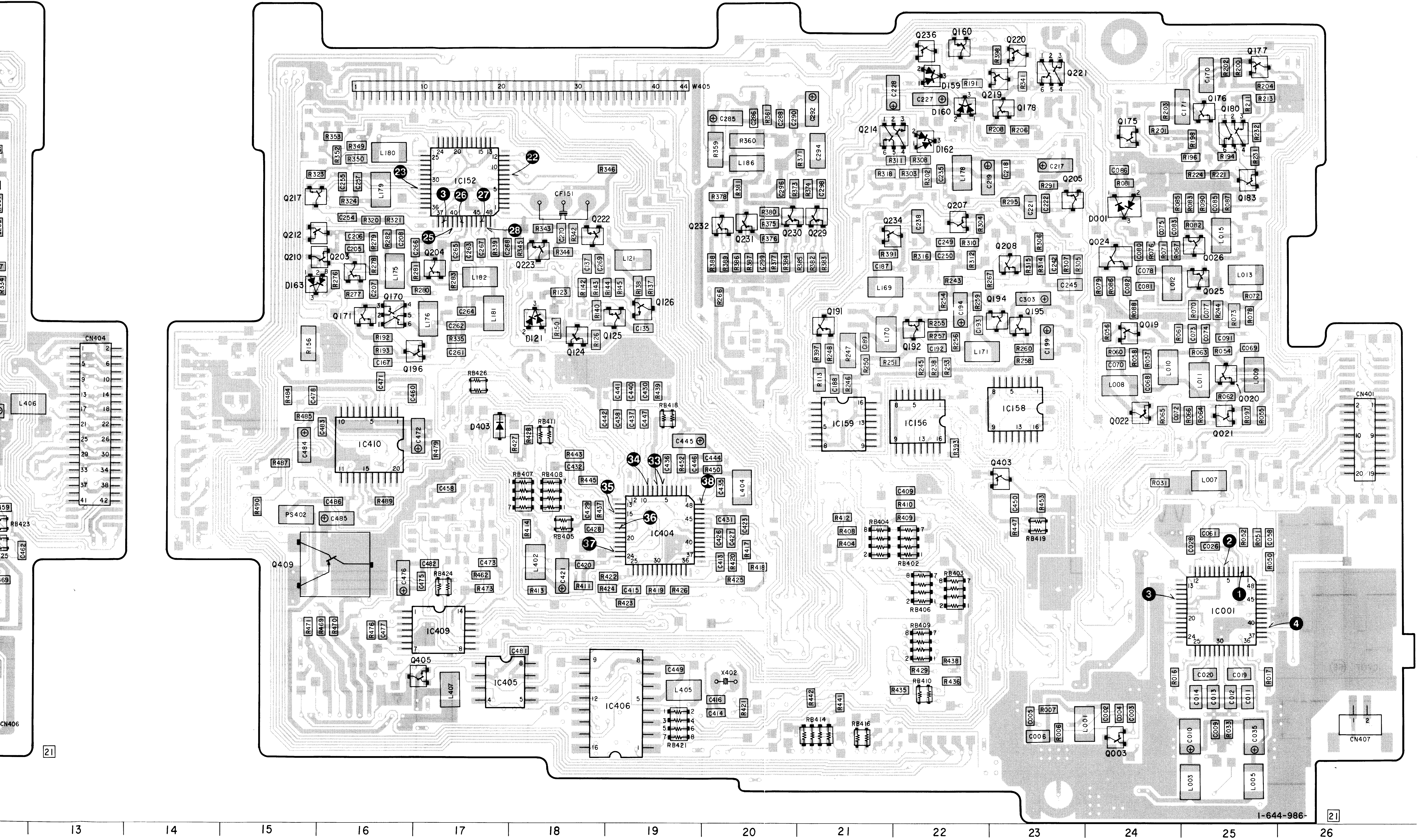
VIDEO VIDEO

VS-95 BOARD(COMPONENT SIDE)


IC152
IC404
IC410
IC409
IC405
IC406
IC159
IC156
IC158
IC001
CN404
CN401
CN406
CN407
W405
Q409
PS402
X402
CF151
D403
1-644-986-
21
13
14
15
16
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21
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23
24
25
26

(DIODE)

D001	8-719-800-76	DIODE 1SS123
D121	8-719-027-50	DIODE MA142WK
D152	8-719-027-48	DIODE MA142WA
D159	8-719-027-50	DIODE MA142WK
D160	8-719-027-50	DIODE MA142WK
D161	8-719-404-46	DIODE MA110
D162	8-719-027-50	DIODE MA142WK
D163	8-719-027-50	DIODE MA142WK
D401	8-719-421-27	DIODE MA728
D402	8-719-027-50	DIODE MA142WK
D403	8-719-404-46	DIODE MA110

(IC)

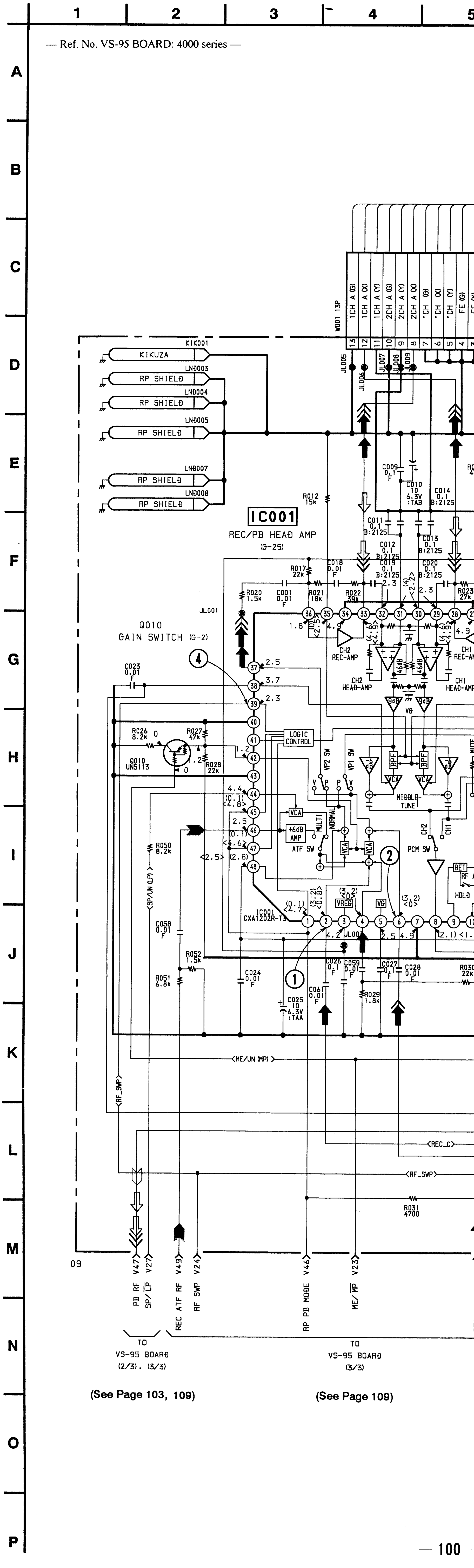
IC001	8-752-033-38	IC CXA1202R
IC003	8-752-053-21	IC CXA1211M
IC121	8-759-605-61	IC CXA1203N
IC151	8-752-065-54	IC CXA1207AR
IC152	8-752-065-56	IC CXA1208R
IC154	8-752-333-24	IC CXL1506M
IC155	8-752-053-21	IC CXA1211M
IC156	8-759-055-82	IC M62353GP
IC158	8-759-055-82	IC M62353GP
IC159	8-759-636-33	IC CXA1452N
IC401	8-759-056-84	IC S-8420AF
IC402	8-752-838-20	IC CXP80624-428R
IC403	8-759-096-79	IC uPD75316GF-318-3B9
IC404	8-759-059-42	IC CXA1481AR
IC405	8-759-044-78	IC BR9011BF-RE2
IC406	8-759-081-96	IC uPD6456GS-620
IC407	8-759-145-63	IC uPD7564G-540
IC408	8-759-057-60	IC MCD004BM
IC409	8-759-999-02	IC TL1596CDB
IC410	8-759-062-02	IC MPC1720VM

(TRANSISTOR)

Q001	8-729-216-22	TRANSISTOR 2SA1162
Q003	8-729-402-55	TRANSISTOR 2SB1218A-R
Q008	8-729-402-32	TRANSISTOR 2SD1819A-R
Q010	8-729-403-35	TRANSISTOR UN5113
Q019	8-729-120-28	TRANSISTOR 2SC1623-L5L6
Q020	8-729-120-28	TRANSISTOR 2SC1623-L5L6
Q021	8-729-905-23	TRANSISTOR 2SA1576-R
Q022	8-729-402-55	TRANSISTOR 2SB1218A-R
Q024	8-729-102-07	TRANSISTOR 2SC2223-F13
Q025	8-729-014-16	TRANSISTOR RN2302
Q026	8-729-402-32	TRANSISTOR 2SD1819A-R
Q121	8-729-403-35	TRANSISTOR UN5113
Q123	8-729-402-42	TRANSISTOR UN5213
Q124	8-729-403-35	TRANSISTOR UN5113
Q125	8-729-117-73	TRANSISTOR 2SC4178-F14
Q126	8-729-402-32	TRANSISTOR 2SD1819A-R
Q151	8-729-101-07	TRANSISTOR 2SB798-DL
Q152	8-729-402-32	TRANSISTOR 2SD1819A-R
Q154	8-729-402-32	TRANSISTOR 2SD1819A-R
Q158	8-729-402-32	TRANSISTOR 2SD1819A-R
Q160	8-729-403-35	TRANSISTOR UN5113
Q161	8-729-402-32	TRANSISTOR 2SD1819A-R
Q162	8-729-403-35	TRANSISTOR UN5113
Q166	8-729-402-55	TRANSISTOR 2SB1218A-R
Q168	8-729-403-35	TRANSISTOR UN5113
Q170	8-729-420-20	TRANSISTOR XN4312
Q171	8-729-117-73	TRANSISTOR 2SC4178-F14
Q175	8-729-402-32	TRANSISTOR 2SD1819A-R
Q176	8-729-402-32	TRANSISTOR 2SD1819A-R
Q177	8-729-402-55	TRANSISTOR 2SB1218A-R
Q178	8-729-402-55	TRANSISTOR 2SB1218A-R
Q180	8-729-422-54	TRANSISTOR XN4215
Q182	8-729-402-32	TRANSISTOR 2SD1819A-R
Q183	8-729-420-53	TRANSISTOR UN5115
Q184	8-729-402-32	TRANSISTOR 2SD1819A-R
Q189	8-729-402-32	TRANSISTOR 2SD1819A-R
Q191	8-729-402-32	TRANSISTOR 2SD1819A-R
Q192	8-729-402-32	TRANSISTOR 2SD1819A-R
Q194	8-729-402-32	TRANSISTOR 2SD1819A-R
Q195	8-729-402-55	TRANSISTOR 2SB1218A-R
Q196	8-729-403-35	TRANSISTOR UN5113
Q199	8-729-807-87	TRANSISTOR 2SB1295-UL6
Q200	8-729-013-88	TRANSISTOR RN1302
Q203	8-729-402-55	TRANSISTOR 2SB1218A-R
Q204	8-729-402-32	TRANSISTOR 2SD1819A-R
Q205	8-729-402-42	TRANSISTOR UN5213
Q207	8-729-403-35	TRANSISTOR UN5113
Q208	8-729-013-88	TRANSISTOR RN1302
Q210	8-729-402-42	TRANSISTOR UN5213
Q212	8-729-402-55	TRANSISTOR 2SB1218A-R
Q214	8-729-420-12	TRANSISTOR XN4213
Q217	8-729-402-42	TRANSISTOR UN5213
Q219	8-729-403-35	TRANSISTOR UN5113
Q220	8-729-402-42	TRANSISTOR UN5213
Q221	8-729-420-12	TRANSISTOR XN4213
Q222	8-729-402-32	TRANSISTOR 2SD1819A-R
Q223	8-729-402-42	TRANSISTOR UN5213
Q229	8-729-402-55	TRANSISTOR 2SB1218A-R
Q230	8-729-402-32	TRANSISTOR 2SD1819A-R
Q231	8-729-402-55	TRANSISTOR 2SB1218A-R
Q232	8-729-402-32	TRANSISTOR 2SD1819A-R
Q233	8-729-402-32	TRANSISTOR 2SD1819A-R
Q234	8-729-402-55	TRANSISTOR 2SB1218A-R
Q236	8-729-420-56	TRANSISTOR UN511E
Q237	8-729-425-50	TRANSISTOR 2SB1462Q
Q401	8-729-402-48	TRANSISTOR UN521E
Q403	8-729-403-35	TRANSISTOR UN5113
Q405	8-729-907-00	TRANSISTOR DTC114EU
Q409	8-729-017-67	TRANSISTOR 2SB1574

VS-95 (REC/PB HEAD AMP) SCHEMATIC DIAGRAM

• Refer to p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A
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D
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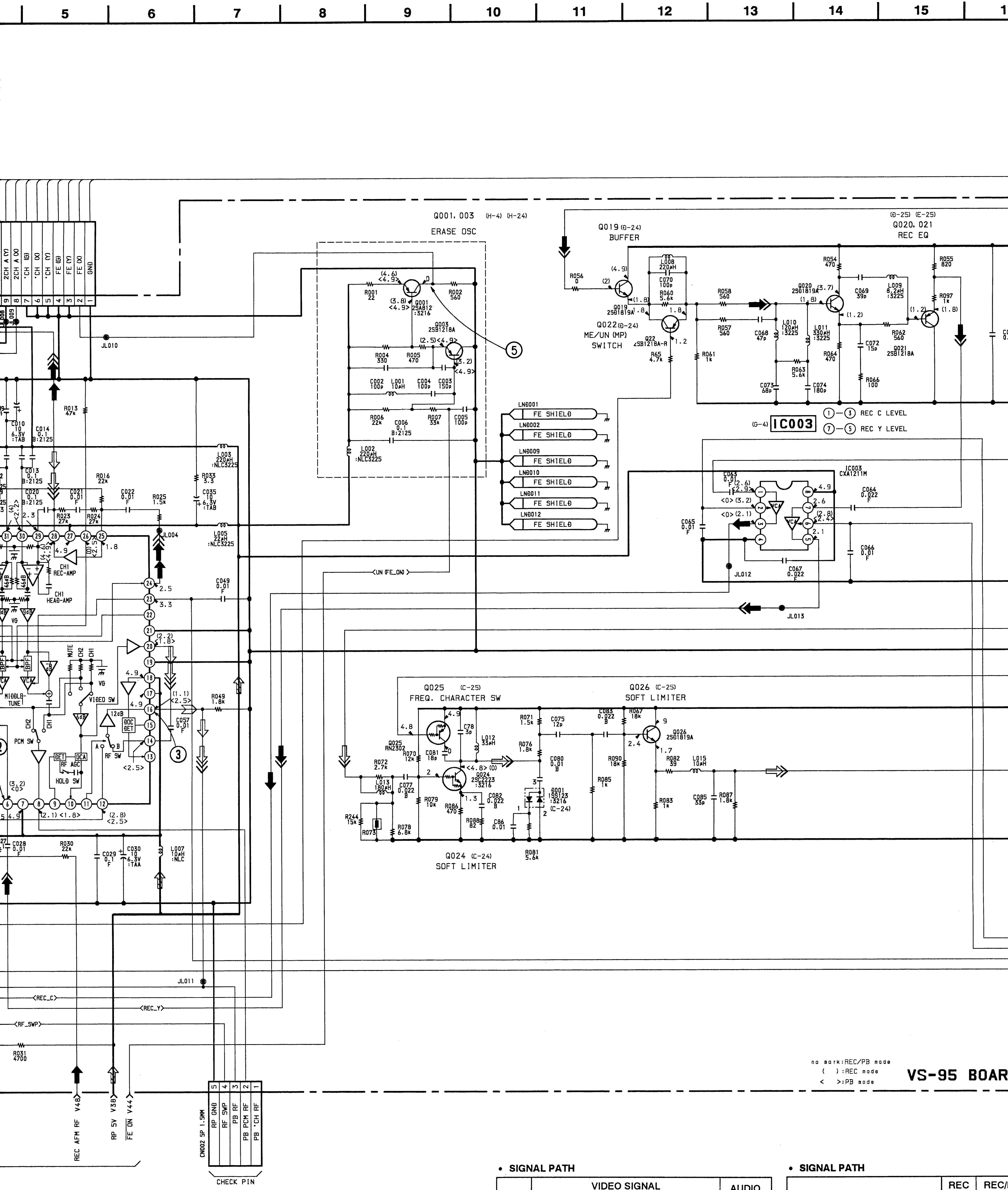
G
H
I
J
K
L
M
N
O
P
— Ref. No. VS-95 BOARD: 4000 series —
W001 13P
1CH A (G)
1CH A (X)
1CH A (Y)
2CH A (G)
2CH A (Y)
2CH A (X)
FE (G)
KIK001
KIKUZA
LN8003
RP SHIELD
LN8004
RP SHIELD
LN8005
RP SHIELD
LN8007
RP SHIELD
LN8008
RP SHIELD
IC001
REC/PB HEAD AMP
(G-25)
Q010
GAIN SWITCH (G-2)
Q010
UN5113
LOGIC CONTROL
CH2 REC-AMP
CH2 HEAD-AMP
CH1 REC-AMP
CH1 HEAD-AMP
MIDDLE-TUNE
+6dB AMP
ATF SW
MULTI
NORMAL
VCA
VREG
VG
PCM SW
HOLD
IC001
CXA1202R-T5
R012 15k
R017 22k
R020 1.5k
C001 0.01
R021 18k
R022 39k
R023 27k
R026 8.2k
R027 47k
R028 22k
R029 1.8k
R030 22k
R031 4700
R050 8.2k
R051 6.8k
R052 1.5k
C023 0.01
C024 0.01
C025 10 6.3V :TAA
C058 0.01
JL001
<ME/UN (MP)>
<RF_SWP>
<REC_C>
<SP/UN (LP)>
09
PB RF V47
SP/LP V27
REC ATF RF V49
RF SWP V24
RP PB MODE V46
ME/MP V23
TO VS-95 BOARD (2/3), (3/3)
(See Page 103, 109)
TO VS-95 BOARD (3/3)
(See Page 109)

• Refer to page 95 for Printed Wiring Board.


5
6
7
8
9
10
11
12
13
14
15
Q001, 003 (H-4) (H-24)
ERASE OSC
Q019 (B-24)
BUFFER
Q022 (B-24)
ME/UN (MP)
SWITCH
Q020, 021
REC EQ
IC003
①—③ REC C LEVEL
⑦—⑤ REC Y LEVEL
IC003
CXA1211M
FE SHIELD
LN0001
LN0002
LN0009
LN0010
LN0011
LN0012
Q025 (C-25)
FREQ. CHARACTER SW
Q026 (C-25)
SOFT LIMITER
Q024 (C-24)
SOFT LIMITER
CH1
REC-AMP
CH1
HEAD-AMP
MIDDLE-
TUNE
VIDEO SW
PCM SW
RF SW
RF AGC
HOLD SW
DOC DET
<UN (FE_ON)>
<REC_C>
<REC_Y>
<RF_SWP>
JL010
JL011
JL012
JL013
REC AFM RF V48
RP 5V V38
FE ON V44
CN002 5P 1.5MM
RP GND
RF SWP
PB RF
PB PCM RF
PB 'CH RF
CHECK PIN
2CH A (Y)
2CH A (X)
'CH (G)
'CH (X)
'CH (Y)
FE (G)
FE (Y)
FE (X)
GND

no mark:REC/PB mode
( ) :REC mode
< >:PB mode

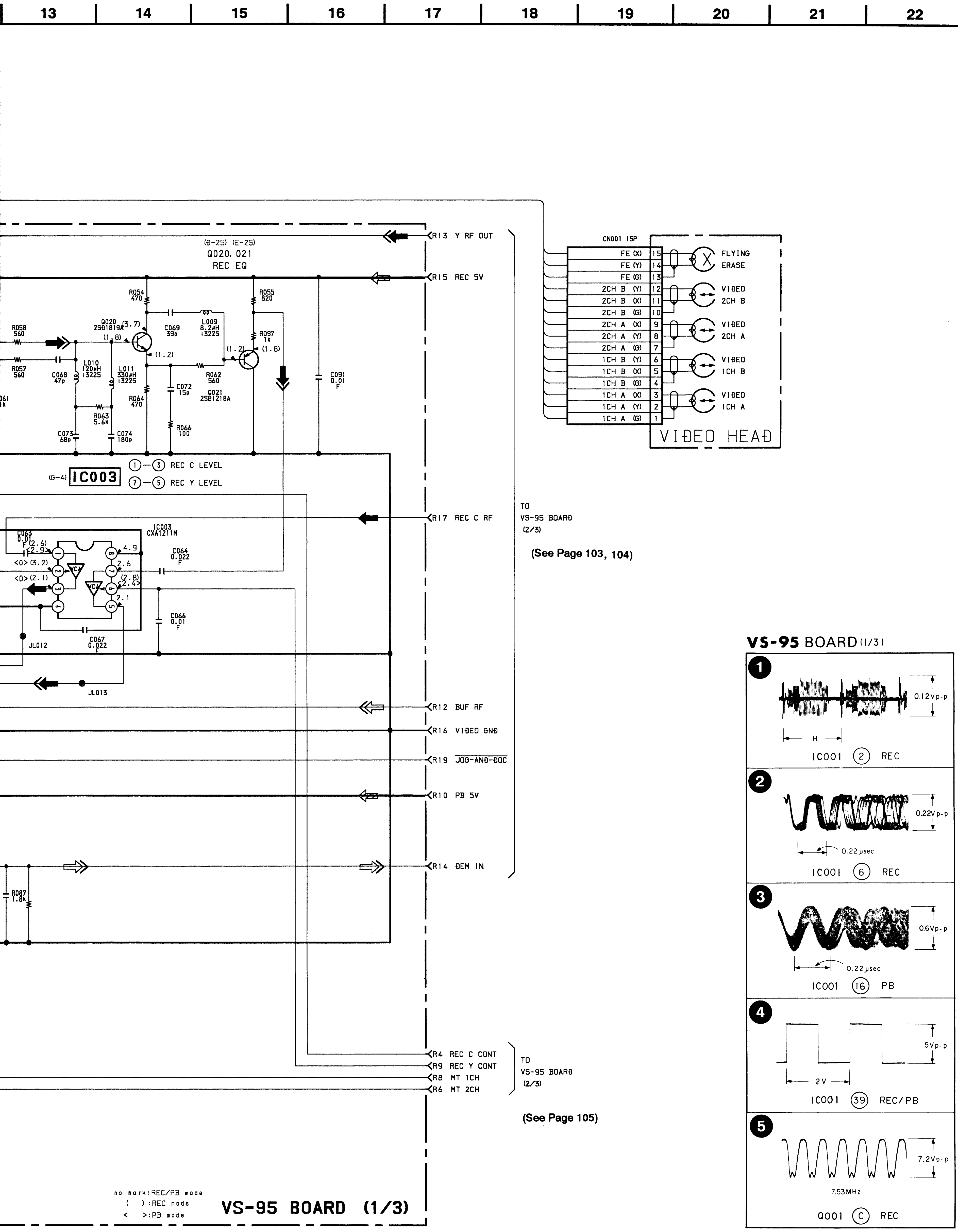
VS-95 BOAR

• **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡
PB		⇨»	⇨»»	⇨

• **SIGNAL PATH**

	REC	REC/
Drum speed servo		
Drum phase servo		
Drum servo (speed and phase)		
Capstan speed servo		
Capstan phase servo		
Capstan servo (speed and phase)		
Ref. signal	➤	


13
14
15
16
17
18
19
20
21
22
23
24
(D-25) (E-25)
Q020, 021
REC EQ
R054 470
R055 820
R058 560
R057 560
Q020 2SD1819A (3.7) (1.8)
C069 39p
L009 8.2μH :3225
R097 1k
(1.2)
(1.8)
C068 47p
L010 120μH :3225
L011 330μH :3225
R062 560
Q021 2SB1218A
C072 15p
C091 0.01 F
R064 470
R063 5.6k
C073 68p
C074 180p
R066 100
R061 1k
(G-4) IC003
①—③ REC C LEVEL
⑦—⑤ REC Y LEVEL
IC003 CXA1211M
C063 0.01 F
C064 0.022 F
C066 0.01 F
C067 0.022 F
JL012
JL013
R087 1.8k
R13 Y RF OUT
R15 REC 5V
R17 REC C RF
R12 BUF RF
R16 VIDEO GND
R19 JOG-AND-DOC
R10 PB 5V
R14 DEM IN
R4 REC C CONT
R9 REC Y CONT
R8 MT 1CH
R6 MT 2CH
TO VS-95 BOARD (2/3)
CN001 15P
FE (X) 15
FE (Y) 14
FE (G) 13
2CH B (Y) 12
2CH B (X) 11
2CH B (G) 10
2CH A (X) 9
2CH A (Y) 8
2CH A (G) 7
1CH B (Y) 6
1CH B (X) 5
1CH B (G) 4
1CH A (X) 3
1CH A (Y) 2
1CH A (G) 1
FLYING ERASE
VIDEO 2CH B
VIDEO 2CH A
VIDEO 1CH B
VIDEO 1CH A
VIDEO HEAD
no mark:REC/PB mode
( ):REC mode
< >:PB mode
VS-95 BOARD (1/3)
VS-95 BOARD (1/3)
1
0.12Vp-p
H
IC001 ② REC
2
0.22Vp-p
0.22μsec
IC001 ⑥ REC
3
0.6Vp-p
0.22μsec
IC001 ⑯ PB
4
5Vp-p
2V
IC001 (39) REC/PB
5
7.2Vp-p
7.53MHz
Q001 Ⓒ REC

(See Page 103, 104)

(See Page 105)

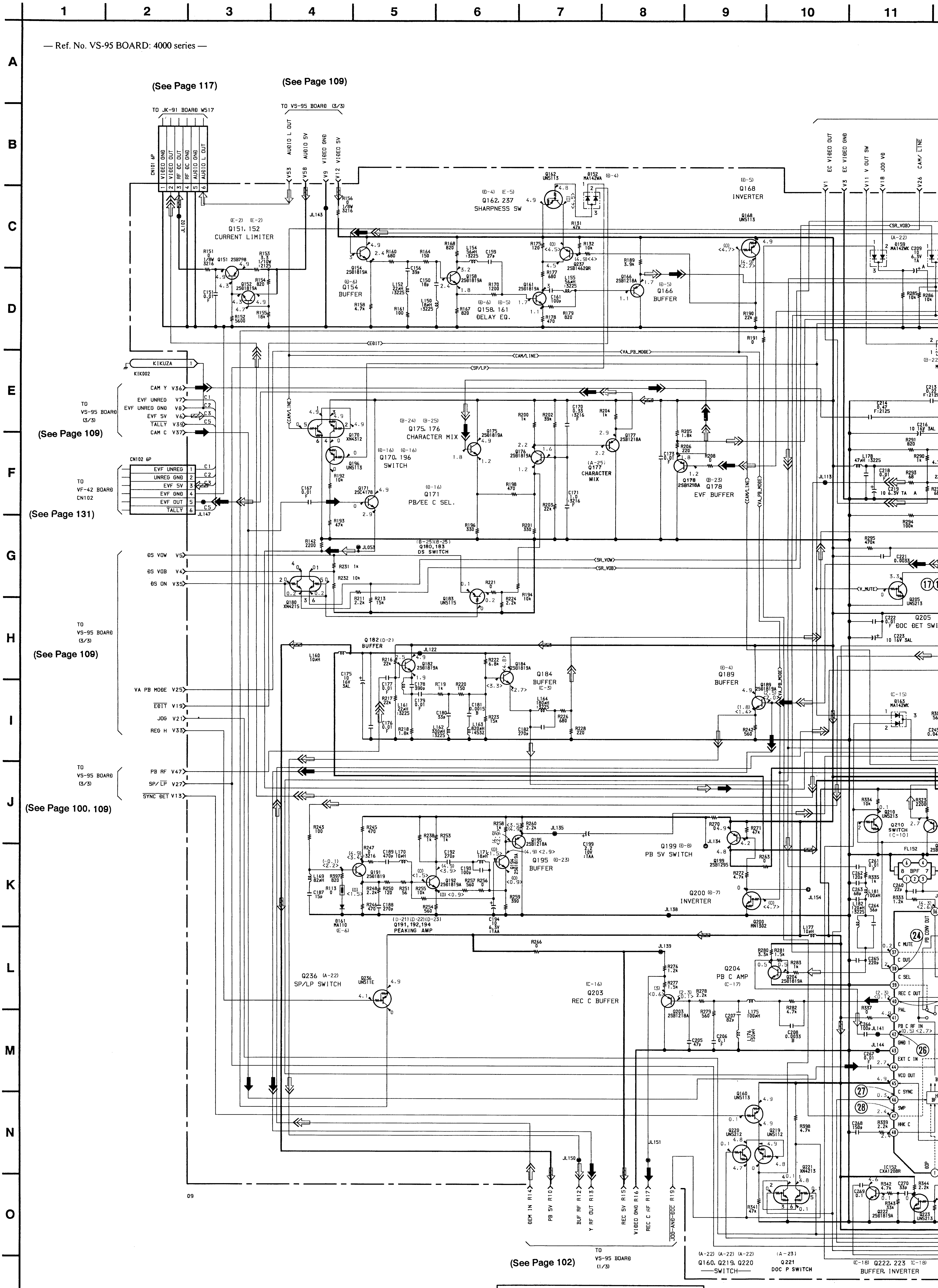
AUDIO SIGNAL
➡
⇨

- **SIGNAL PATH**

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal	➡		⇨

VS-95 (VIDEO) SCHEMATIC DIAGRAM

• Refer to page 95 for Printed Wiring Board.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C
D
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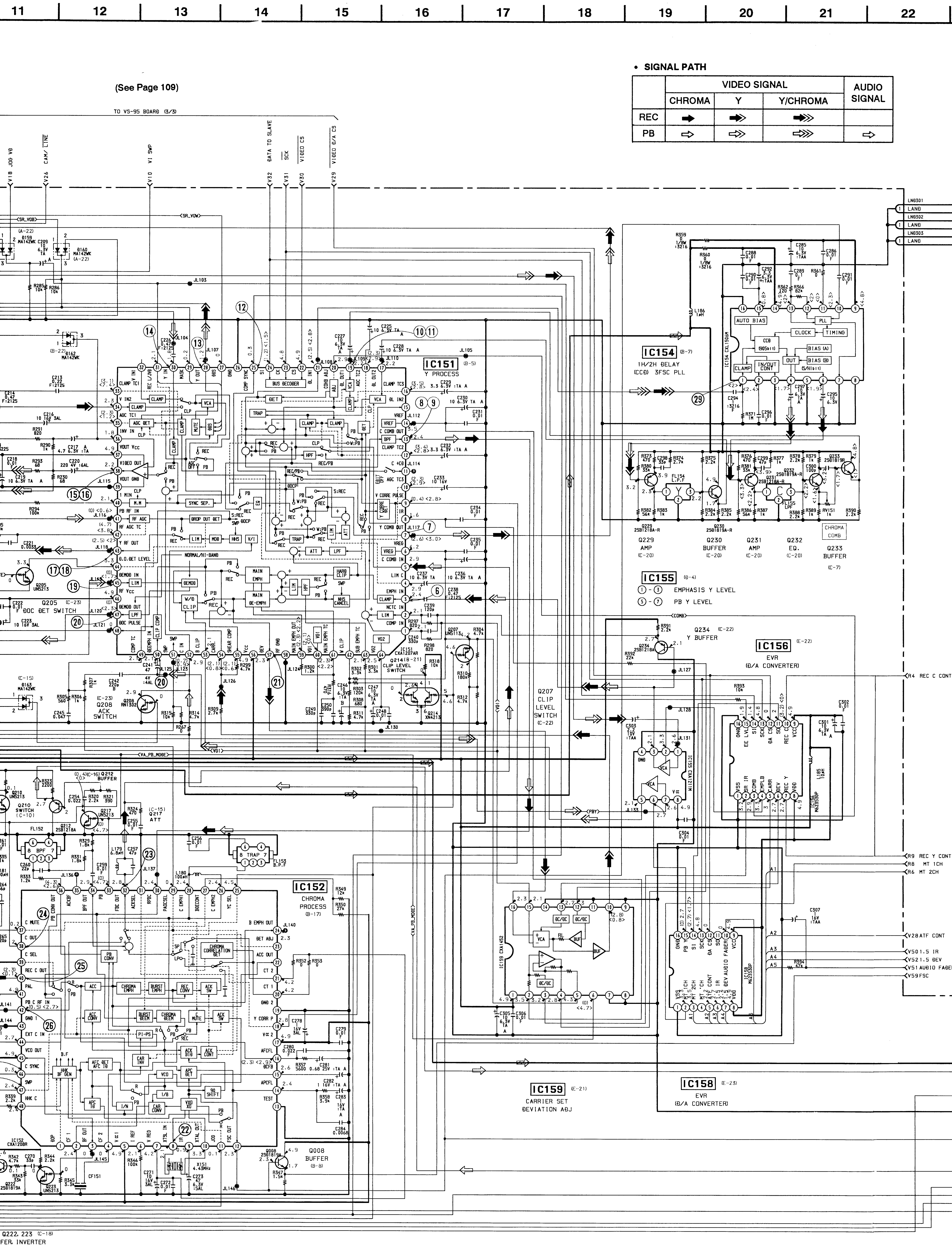
G
H
I
J
K
L
M
N
O
P
— Ref. No. VS-95 BOARD: 4000 series —
(See Page 117)
(See Page 109)
TO JK-91 BOARD W517
TO VS-95 BOARD (3/3)
CN101 6P
VIDEO GND
VIDEO OUT
RF DC OUT
RF DC GND
AUDIO GND
AUDIO L OUT
AUDIO L OUT
AUDIO 5V
VIDEO GND
VIDEO 5V
Q151, 152
CURRENT LIMITER
Q154
BUFFER
Q162, 237
SHARPNESS SW
Q158, 161
DELAY EQ.
Q168
INVERTER
Q166
BUFFER
EC VIDEO OUT
EC VIDEO GND
V OUT 5W
JOG VD
CAM/LINE
KIKUZA
KIK002
TO VS-95 BOARD (3/3)
CAM Y V36
EVF UNREG V7
EVF UNREG GND V8
EVF 5V V6
TALLY V35
CAM C V37
(See Page 109)
CN102 6P
TO VF-42 BOARD CN102
EVF UNREG
UNREG GND
EVF 5V
EVF GND
EVF OUT
TALLY
(See Page 131)
Q175, 176
CHARACTER MIX
Q170, 196
SWITCH
Q171
PB/EE C SEL.
Q177
CHARACTER MIX
Q178
EVF BUFFER
Q180, 183
DS SWITCH
DS VDW V5
DS VDB V4
DS ON V35
TO VS-95 BOARD (3/3)
(See Page 109)
VA PB MODE V25
EDIT V19
JOG V21
REG H V33
Q182
BUFFER
Q184
BUFFER
Q189
BUFFER
Q205
DOC DET SW
TO VS-95 BOARD (3/3)
PB RF V47
SP/LP V27
SYNC DET V13
(See Page 100, 109)
Q191, 192, 194
PEAKING AMP
Q195
BUFFER
Q199
PB 5V SWITCH
Q200
INVERTER
Q210
SWITCH
Q236
SP/LP SWITCH
Q203
REC C BUFFER
Q204
PB C AMP
IC152
CXA1208R
C MUTE
C OUT
C SEL
REC C OUT
PAL
PB C RF IN
GND
EXT C IN
VCO OUT
C SYNC
SWP
HHK C
DEM IN R14
PB 5V R10
BUF RF R12
Y RF OUT R13
REC 5V R15
VIDEO GND R16
REC C RF R17
JOG-AND-DOC R19
(See Page 102)
TO VS-95 BOARD (1/3)
Q160, Q219, Q220
SWITCH
Q221
DOC P SWITCH
Q222, 223
BUFFER, INVERTER

VIDEO VIDEO

(See Page 109)

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	
PB	⇨	⇨»	⇨»»	⇨


11
12
13
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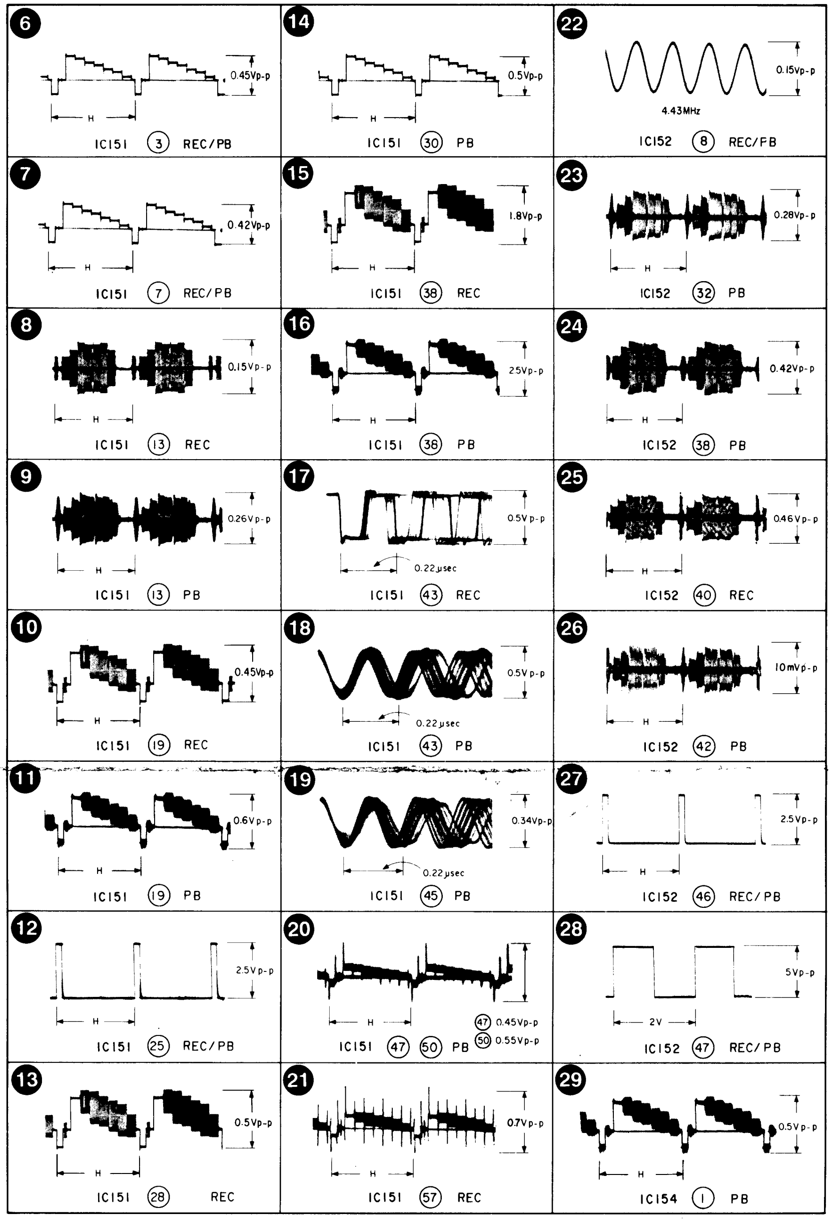
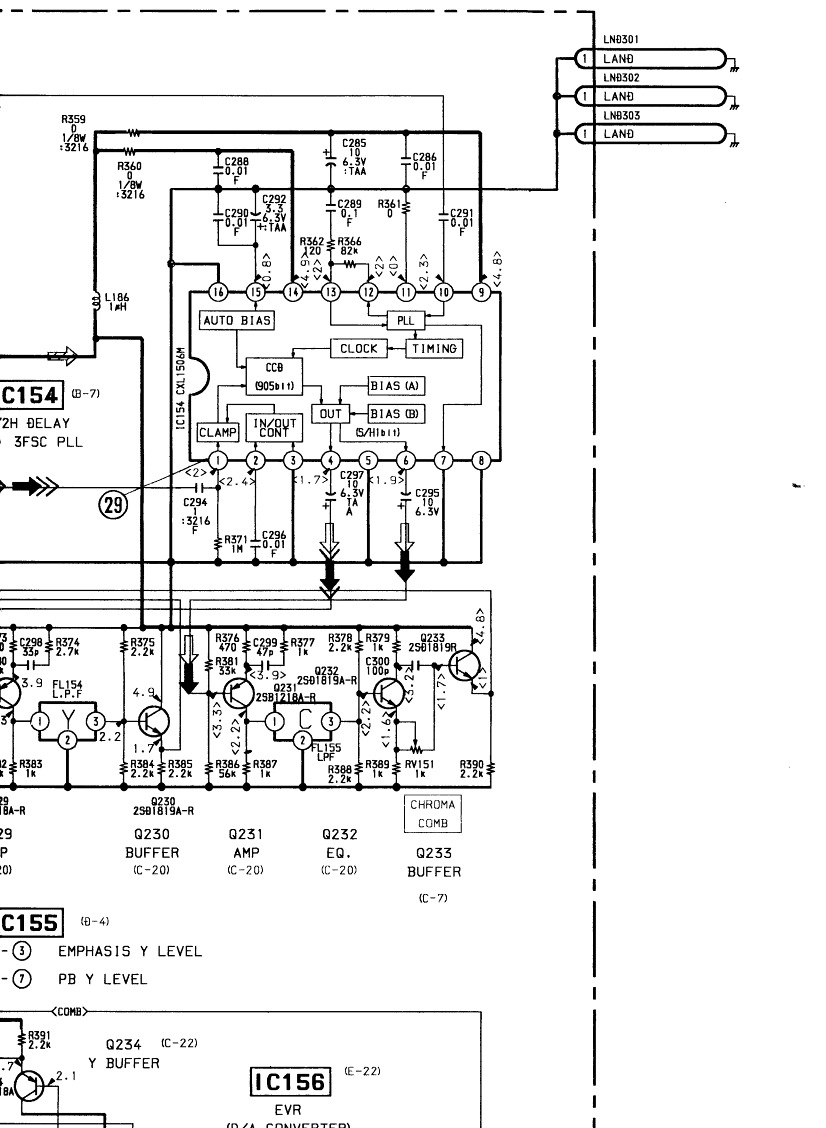
16
17
18
19
20
21
22
TO VS-95 BOARD (3/3)
V18 JOG V8
V26 CAM/ LINE
V10 VI SWP
V32 DATA TO SLAVE
V31 SCK
V30 VIDEO CS
V29 VIDEO D/A CS
IC151 Y PROCESS (B-5)
IC151 CXA1207AR
IC152 CHROMA PROCESS (B-17)
IC152 CXA1208R
IC154 1H/2H DELAY (CCD) 3FSC PLL (B-7)
IC154 CXL1506M
IC155 (D-4)
①-③ EMPHASIS Y LEVEL
⑤-⑦ PB Y LEVEL
IC155 CXA1211M
IC156 EVR (D/A CONVERTER) (E-22)
IC156 M62353GP
IC158 EVR (D/A CONVERTER) (E-23)
IC158 M62353GP
IC159 CARRIER SET DEVIATION ADJ (E-21)
IC159 CXA1452
Q205 DOC DET SWITCH (C-23)
Q207 CLIP LEVEL SWITCH (C-22)
Q208 ACK SWITCH (C-23)
Q210 SWITCH (C-10)
Q212 BUFFER
Q217 ATT (C-15)
Q214 CLIP LEVEL SWITCH (B-21)
Q229 AMP (C-20)
Q230 BUFFER (C-20)
Q231 AMP (C-20)
Q232 EQ. (C-20)
Q233 BUFFER (C-7)
Q234 Y BUFFER (C-22)
Q008 BUFFER (B-8)
Q222, 223 (C-18)
FER, INVERTER
CHROMA COMB
X151 4.43MHz
LN0301 LAND
LN0302 LAND
LN0303 LAND
R4 REC C CONT
R9 REC Y CONT
R8 MT 1CH
R6 MT 2CH
V28 ATF CONT
V50 1.5 IR
V52 1.5 DEV
V51 AUDIO FADER
V59 FSC

IGNAL PATH

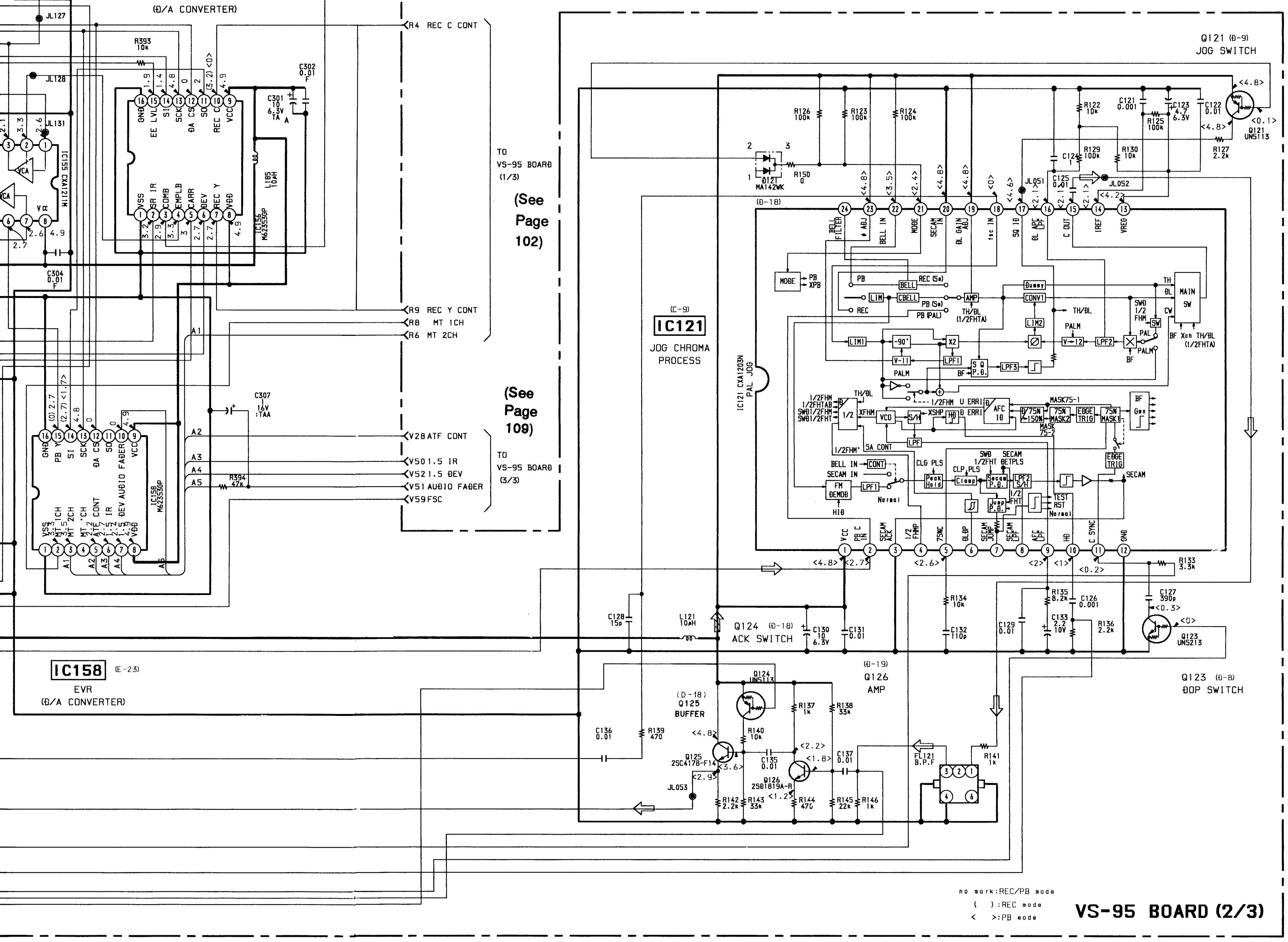
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
EC	➡	➡»	➡»»	
B	⇨	⇨»	⇨»»	⇨

VS-95 BOARD(2/3)





LN0301 LAND
LN0302 LAND
LN0303 LAND
R359 0 1/8W :3216
R360 0 1/8W :3216
C288 0.01 F
C285 10 6.3V :TAA
C286 0.01 F
C290 0.01 F
C292 3.3 6.3V :TAA
C289 0.1 F
R361 0
C291 0.01 F
R362 120
R366 82k
L186 1μH
AUTO BIAS
PLL
CLOCK
TIMING
CCD (905bit)
BIAS (A)
BIAS (B)
OUT
(S/H1bit)
CLAMP
IN/OUT CONT
IC154 CXL1506M
IC154 (B-7)
2H DELAY
3FSC PLL
29
C294 1 :3216 F
R371 1M
C296 0.01 F
C297 10 6.3V TA A
C295 10 6.3V
C298 33p
R374 2.7k
FL154 L.P.F
R375 2.2k
R376 470
C299 47p
R377 1k
R378 2.2k
R379 1k
Q233 2SD1819R
R381 33k
C300 100p
Q232 2SD1819A-R
Q231 2SB1218A-R
FL155 LPF
R383 1k
R384 2.2k
R385 2.2k
R386 56k
R387 1k
R388 2.2k
R389 1k
RV151 1k
R390 2.2k
CHROMA COMB
Q230 2SD1819A-R
Q230 BUFFER (C-20)
Q231 AMP (C-20)
Q232 EQ. (C-20)
Q233 BUFFER (C-7)
IC155 (D-4)
-③ EMPHASIS Y LEVEL
-⑦ PB Y LEVEL



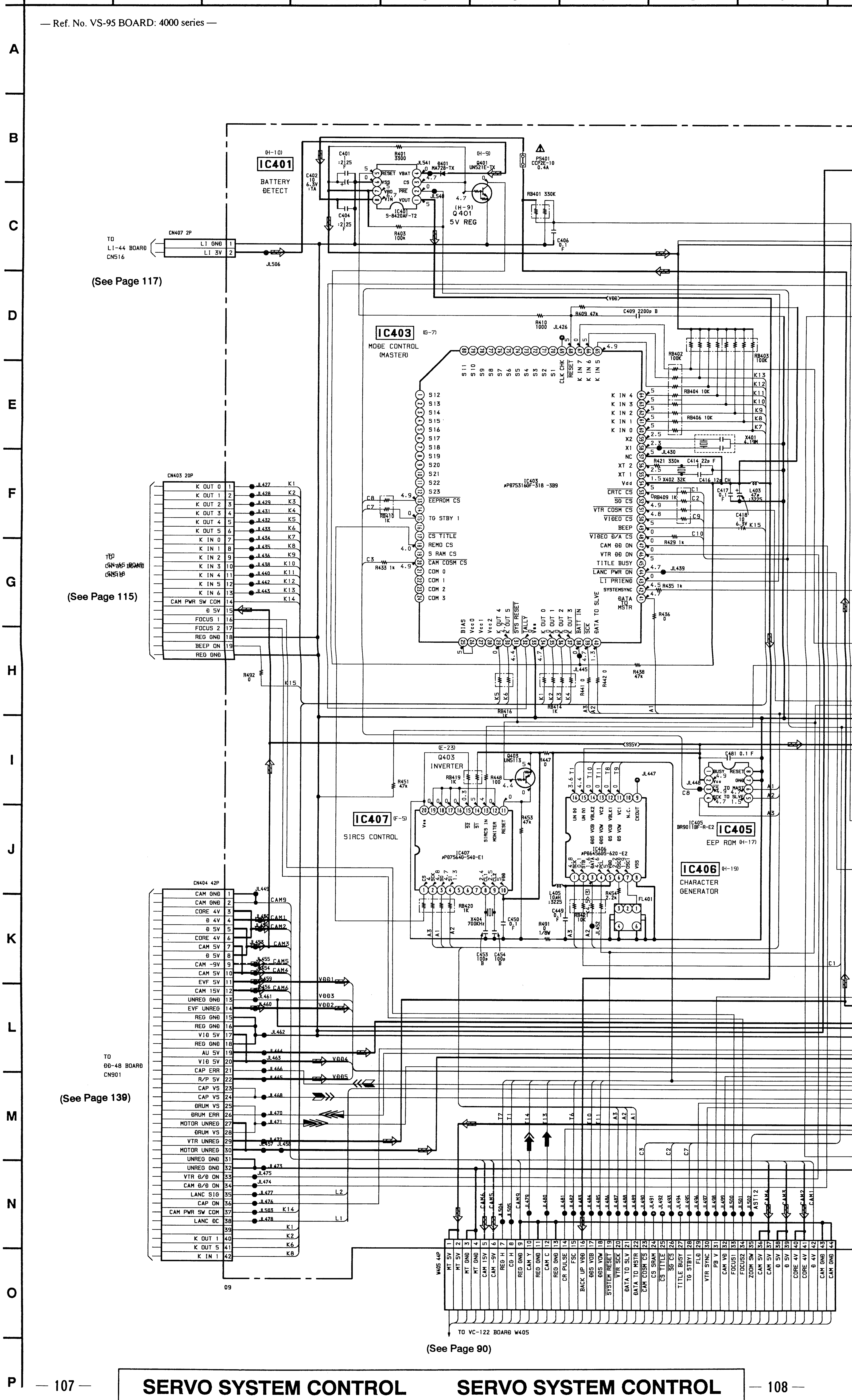
<COMB>
R391 2.2k
Q234 (C-22) Y BUFFER
IC156 (E-22) EVR (D/A CONVERTER)
JL127
JL128
JL131
R393 10k
GND EE LVL SI SCK DA CS SO REC C VCC
VSS SR IR COMB EMPLB CARR DEV REC Y VDD
IC156 M62353GP
C302 0.01 F
C301 10 6.3V TA A
L185 10μH
IC155 CXA1211M
VCA
C304 0.01 F
R4 REC C CONT
R9 REC Y CONT
R8 MT 1CH
R6 MT 2CH
TO VS-95 BOARD (1/3)
(See Page 102)
C307 16V :TAA
GND PB Y SI SCK DA CS SO AUDIO FADER VCC
VSS MT 1CH MT 2CH MT 3CH ATF CONT IR DEV VDD
IC158 M62353GP
A1 A2 A3 A4 A5
R394 47k
V28 ATF CONT
V50 1.5 IR
V52 1.5 DEV
V51 AUDIO FADER
V59 FSC
(See Page 109)
TO VS-95 BOARD (3/3)
IC158 (E-23) EVR (D/A CONVERTER)
Q121 (D-9) JOG SWITCH
R126 100k
R123 100k
R124 100k
R122 10k
C121 0.001
C123 4.7 6.3V
C122 0.01
R125 100k
Q121 UN5113
R127 2.2k
D121 MA142WK
R150 0
C124 1
R129 100k
R130 10k
C125 0.01
JL051
JL052
(D-18)
BELL FILTER
ϕ ADJ
BELL IN
MODE
SECAM IN
DL GAIN ADJ
fsc IN
SQ ID
DL AFC LPF
C OUT
IREF
VREG
MODE PB XPB
BELL
REC (Se)
LIM
CBELL
PB (Se)
PB (PAL)
AMP
TH/DL (1/2FHTA)
Dummy
CONV1
LIM2
TH/DL
MAIN SW
SWD 1/2 FHM
SW
PAL
PALM
BF
BF Xch TH/DL (1/2FHTA)
CW
LIM1
-90°
X2
V-11
LPF1
S Q P.D.
LPF3
V-12
LPF2
(C-9) IC121 JOG CHROMA PROCESS
IC121 CXA1203N PAL JOG
1/2FHM 1/2FHTAB SWD1/2FHM SWD1/2FHT
1/2 XFHM VCO S/H XSHP HD
U ERRI D ERRI AFC ID
MASK75-1
D/75% 150%
75% MASK2
EDGE TRIG
75% MASK1
MASK 75-2
BF Gen
1/2FHM' SA CONT LPF
BELL IN CONT
SECAM IN
FM DEMOD HID
LPF1
Normal
CLG PLS Peak Hold
CLP PLS Clamp
SWD 1/2FHT SECAM DETPLS
Secam P.D.
LPF2 S/H
Jump P.D.
1/2 FHT
TEST RST Normal
EDGE TRIG
SECAM
VCC PB C IN SECAM ACK 1/2 FHMP 75%C DLDP SECAM JUMP SECAM LPF AFC LPF HD C SYNC GND
R133 3.3k
R134 10k
C132 110p
C128 15p
L121 10μH
Q124 (D-18) ACK SWITCH
C130 10 6.3V
C131 0.01
C129 0.01
R135 8.2k
C126 0.001
C133 2.2 10V
R136 2.2k
C127 390p
Q123 UN5213
Q123 (D-8) DOP SWITCH
(D-19) Q126 AMP
Q124 UN5113
(D-18) Q125 BUFFER
R137 1k
R138 33k
C136 0.01
R139 470
R140 10k
Q125 2SC4178-F14
C135 0.01
C137 0.01
Q126 2SD1819A-R
JL053
R142 2.2k
R143 33k
R144 470
R145 22k
R146 1k
FL121 B.P.F
R141 1k

no mark:REC/PB mode
( ):REC mode
< >:PB mode

VS-95 BOARD (2/3)

• Refer to page 95 for Printed Wiring Board.

— Ref. No. VS-95 BOARD: 4000 series —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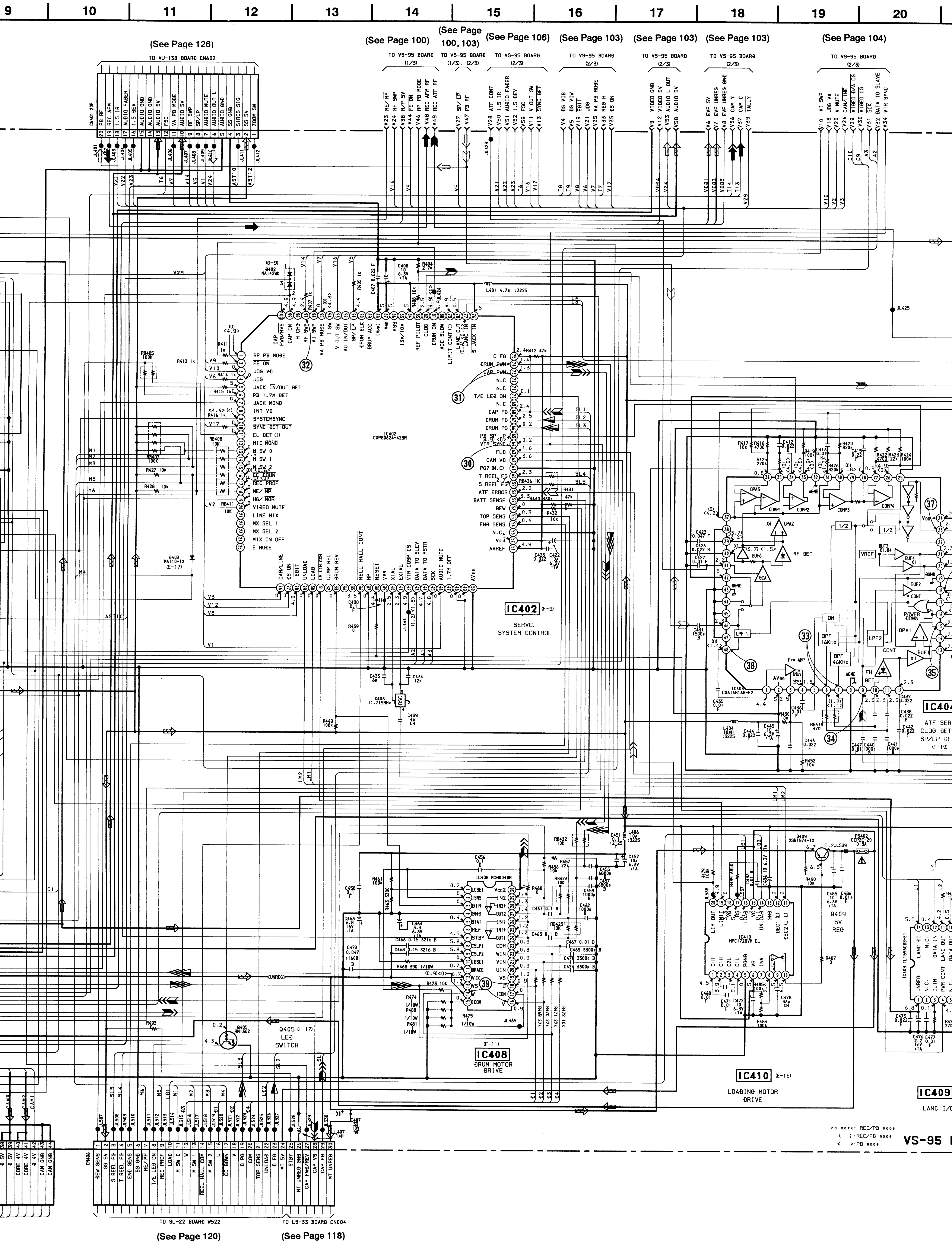
I
J
K
L
M
N
O
P
IC401 (H-10)
BATTERY DETECT
IC401 S-8420AF-T2
Q401 UN521E-TX
Q401 (H-9) 5V REG
D401 MA728-TX
PS401 CCP2E-10 0.4A
RB401 330K
C406 0.1 F
R401 3300
R403 100k
C401 :2125 F
C402 10 6.3V :TA
C404 :2125 F
JL541
JL540
TO LI-44 BOARD CN516
CN407 2P
LI GND
LI 3V
JL506
(See Page 117)
IC403 (G-7)
MODE CONTROL (MASTER)
IC403 μPD75316GF-318-3B9
R409 47k
C409 2200p B
R410 1000
JL426
RB402 100K
RB403 100K
RB404 10K
RB406 10K
X401 4.19M
R421 330k
C414 22p F
X402 32K
C416 12p CH
L403 47μ :3225
C417 0.1 F
C418 10 6.3V :TA
RB409 1K
R429 1k
JL439
R435 1k
R436 0
RB410 1K
R433 1k
S12
S13
S14
S15
S16
S17
S18
S19
S20
S21
S22
S23
EEPROM CS
TG STBY 1
CS TITLE
REMO CS
S RAM CS
CAM COSM CS
COM 0
COM 1
COM 2
COM 3
K IN 4
K IN 3
K IN 2
K IN 1
K IN 0
X2
X1
NC
XT 2
XT 1
Vdd
CRTC CS
SG CS
VTR COSM CS
VIDEO CS
BEEP
VIDEO D/A CS
CAM DD ON
VTR DD ON
TITLE BUSY
LANC PWR ON
LI PRIEND
SYSTEMSYNC
DATA TO MSTR
S11
S10
S9
S8
S7
S6
S5
S4
S3
S2
S1
CLK CHK
RESET
K IN 7
K IN 6
K IN 5
BIAS
Vcc 0
Vcc 1
Vcc 2
K OUT 4
K OUT
SYS RESET
K OUT 5
TALLY
Vss
K OUT 0
K OUT 1
K OUT 2
K OUT 3
BATT IN
SCK
DATA TO SLVE
(VDD)
RB416 1K
RB414 1K
R441 0
R442 0
R438 47k
JL445
R492 0
K15
CN403 20P
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
CAM PWR SW COM
D 5V
FOCUS 1
FOCUS 2
REG GND
BEEP ON
REG GND
TO CN-45 BOARD CN518
(See Page 115)
(D5SV)
Q403 (E-23) INVERTER
Q403 UN5113
RB419 1K
R448 100
R447 0
R451 47k
R453 47k
IC407 (F-5)
SIRCS CONTROL
IC407 μPD75P640-540-E1
RB420 1K
X404 700KHz
C450 0.1 F
C453 100p B
C454 100p B
R491 0 1/8W
IC406 μPB645605-620-E2
IC406 (H-19)
CHARACTER GENERATOR
L405 10μH :3225
C449 0.1 F
RB421 10K
R454 2.2k
FL401
JL447
JL448
JL452
C481 0.1 F
IC405 BR9011BF-R-E2
IC405 (H-17)
EEP ROM
BUSY
RESET
Vcc
GND
CS
TO MASTR
SCK
TO SLVE
CN404 42P
CAM GND
CAM GND
CORE 4V
D 4V
D 5V
CORE 4V
CAM 5V
D 5V
CAM -9V
CAM 5V
EVF 5V
CAM 15V
UNREG GND
EVF UNREG
REG GND
REG GND
VID 5V
REG GND
AU 5V
VID 5V
CAP ERR
R/P 5V
CAP VS
CAP VS
DRUM VS
DRUM ERR
MOTOR UNREG
DRUM VS
VTR UNREG
MOTOR UNREG
UNREG GND
UNREG GND
VTR D/D ON
CAM D/D ON
LANC SIG
CAP ON
CAM PWR SW COM
LANC DC
K OUT 1
K OUT 5
K IN 1
TO DD-48 BOARD CN901
(See Page 139)
VDD1
VDD2
VDD3
VDD4
VDD5
CAM1
CAM2
CAM3
CAM4
CAM5
CAM6
CAM9
L1
L2
K14
09
W405 44P
MT 5V
MT 5V
MT GND
CAM GND
CAM 15V
CAM -9V
REG H
CG H
REG GND
CAM Y
REG GND
CAM C
REG GND
CR PULSE
FSC
BACK UP VDD
DDS VDD
DDS VDW
SYSTEM RESET
VTR SCK
DATA TO SLV
DATA TO MSTR
CAM COSM CS
CS SRAM
CS TITLE
SG CS
TITLE BUSY
TG STBY1
FLD
VTR SYNC
PB V
CAM VD
FOCUS1
FOCUS2
ZOOM SW
CAM 5V
CAM 5V
D 5V
CORE 4V
CORE 4V
D 4V
CAM GND
CAM GND
TO VC-122 BOARD W405
(See Page 90)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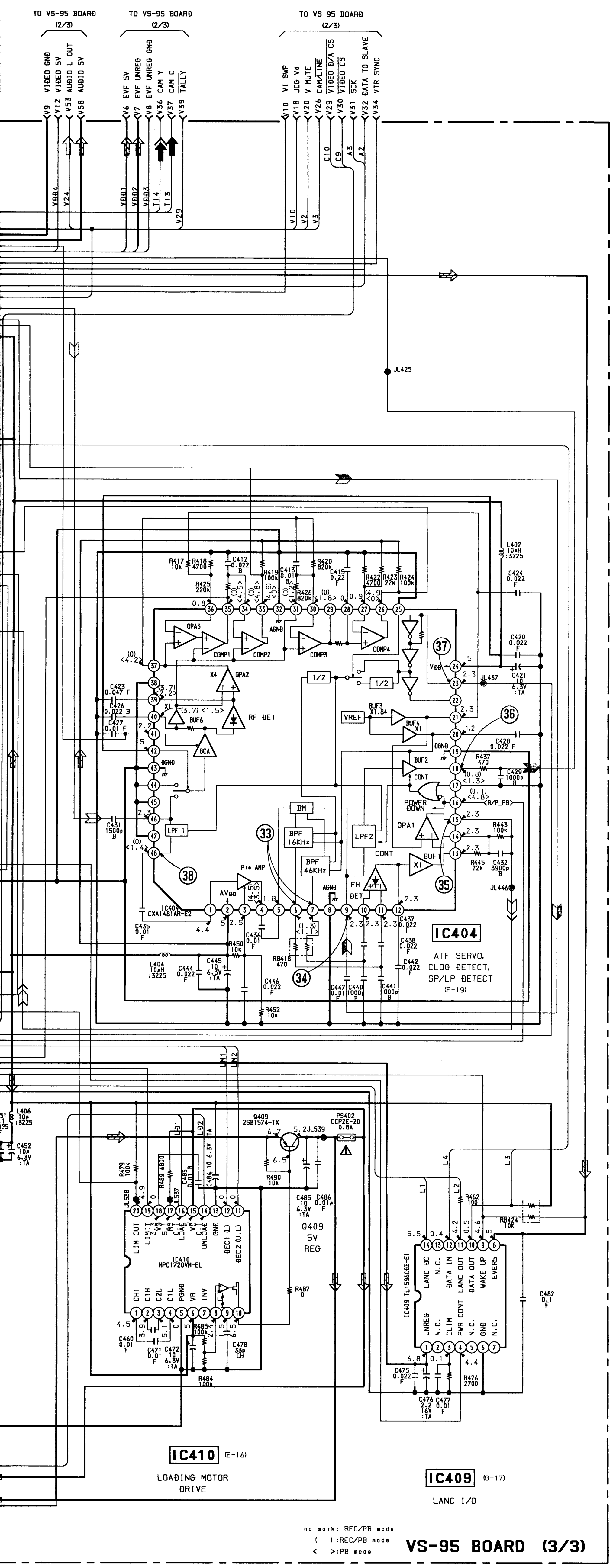
(See Page 126)
TO AU-138 BOARD CN602
(See Page 100)
TO VS-95 BOARD (1/3)
(See Page 100, 103)
TO VS-95 BOARD (1/3), (2/3)
(See Page 106)
TO VS-95 BOARD (2/3)
(See Page 103)
TO VS-95 BOARD (2/3)
(See Page 103)
TO VS-95 BOARD (2/3)
(See Page 103)
TO VS-95 BOARD (2/3)
(See Page 104)
TO VS-95 BOARD (2/3)
CN401 20P
IC402 CXP80624-428R
IC402 (F-9)
SERVO, SYSTEM CONTROL
IC404 CXA1481AR-E2
IC404
ATF SER
CLOG DET
SP/LP DE
(F-19)
IC408 MC8004BM
IC408 (F-11)
DRUM MOTOR DRIVE
IC410 MPC1720VM-EL
IC410 (E-16)
LOADING MOTOR DRIVE
IC409 TL1596CBP-E1
IC409
LANC I/
Q405 RN1302
Q405 (H-17)
LED SWITCH
Q409 2SB1574-TX
Q409 5V REG
D402 MA142WK
D403 MA110-TX (E-17)
X403 11.719MHz
PS402 CCP2E-20 0.8A
CN406
TO SL-22 BOARD W522
(See Page 120)
TO LS-33 BOARD CN004
(See Page 118)
no mark: REC/PB mode
( ) :REC/PB mode
< >:PB mode
VS-95

SERVO SYSTEM CONTROL

3) (See Page 103) (See Page 103) (See Page 104)


TO VS-95 BOARD (2/3)
V9 VIDEO GND
V12 VIDEO 5V
V53 AUDIO L OUT
V58 AUDIO 5V
V6 EVF 5V
V7 EVF UNREG
V8 EVF UNREG GND
V36 CAM Y
V37 CAM C
V39 TALLY
V10 VI SWP
V18 JOG Vd
V20 V MUTE
V26 CAM/LINE
V29 VIDEO B/A CS
V30 VIDEO CS
V31 SCK
V32 DATA TO SLAVE
V34 VTR SYNC
JL425
OPA3
COMP1
COMP2
COMP3
COMP4
X4
OPA2
RF DET
BUF6
GCA
VREF
BUF3
BUF2
CONT
POWER DOWN
OPA1
LPF 1
LPF2
BPF 16KHz
BPF 46KHz
BM
Pre AMP
FH DET
BUF1
IC404 CXA1481AR-E2
IC404
ATF SERVO, CLOG DETECT, SP/LP DETECT
(F-19)
Q409 2SB1574-TX
PS402 CCP2E-20 0.8A
Q409 5V REG
IC410 MPC1720VM-EL
IC409 TL1596CEB-E1
IC410 (E-16)
LOADING MOTOR DRIVE
IC409 (G-17)
LANC I/O
no mark: REC/PB mode
( ):REC/PB mode
< >:PB mode
VS-95 BOARD (3/3)

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡		➡
PB				⇨

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷	
Drum servo (speed and phase)		▷	
Capstan speed servo			
Capstan phase servo			▷
Capstan servo (speed and phase)		▷	
Ref. signal	➤	▷	▷

VS-95 BOARD(3/3)

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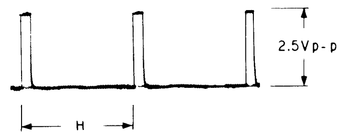
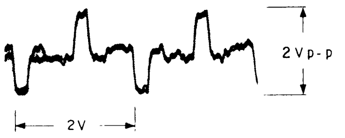


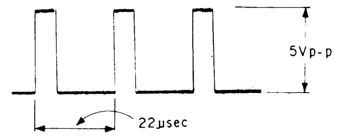
IC402 (64) REC/PB

35



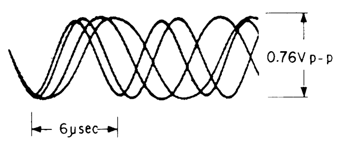
IC404 (15) PB

31



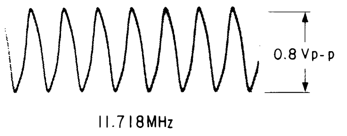
IC402 (73),(74) REC/PB

36



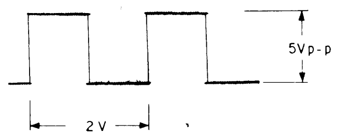
IC404 (18) REC

37



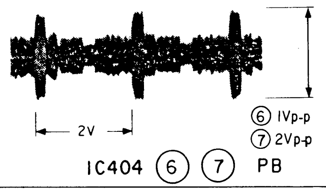
IC404 (23) REC/PB

32



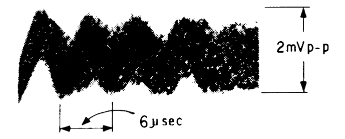
IC402 (97) REC/PB

33



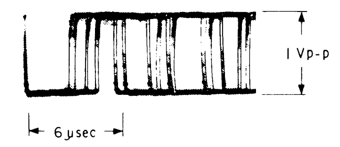
IC404 (6) (7) PB

38



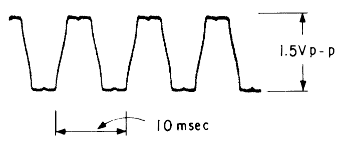
IC404 (48) PB

34



IC404 (9) REC/PB

39



IC408 (14),(16),(18) REC/PB

CF-32 (CAMERA FUNCTION SWITCH), CN-65 (BOARD LINK), ED-35 (CAMERA FUNCTION SWITCH), MF-191 (MANUAL FOCUS SWITCH), VK-27 (VTR FUNCTION SWITCH),

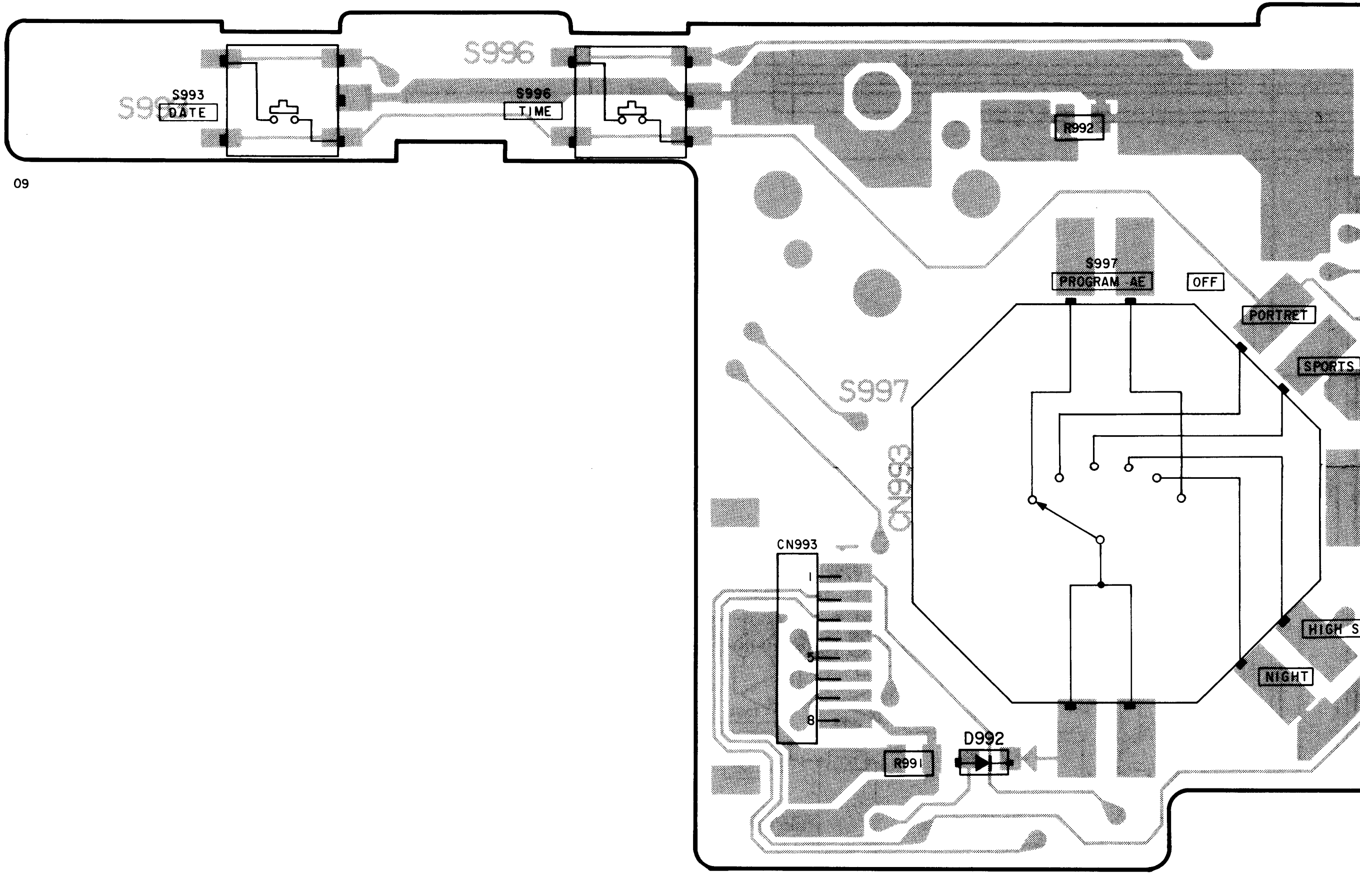
— Ref. No. JK-91 BOARD: 3000 series, LI-44 BOARD: 4000 series, MF-191 BOARD: 5000 series, CN-65 BOARD: 6000 series, CF-32 BOARD: 7000 series, ED-35 BOARD: 8000 series, VK-27 BOARD: 9000 series —

- **For printed wiring boards.**
- CF-32, ED-35, MF-191, VK-27 boards is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

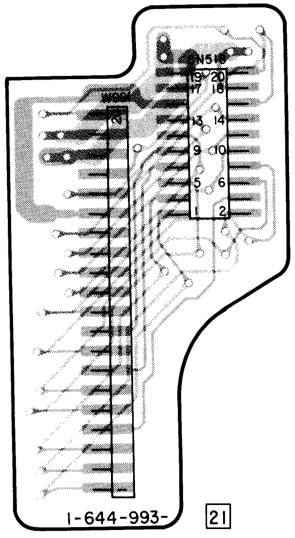
Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

D992 8-719-404-

CF-32 BOARD (COMPONENT SIDE)

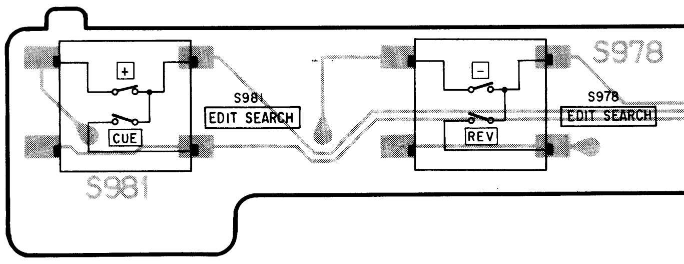

S993
DATE
S996
TIME
S996
R992
S997
PROGRAM AE
OFF
PORTRET
SPORTS
S997
CN993
CN993
1
5
8
HIGH S
NIGHT
R991
D992
09

CN-65 BOARD (CONDUCTOR SIDE)

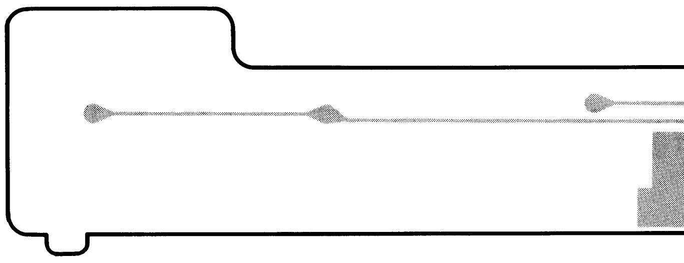

CN510
19 20
17 18
13 14
9 10
5 6
1 2
W001
1-644-993-
21
09

- **For printed wiring boards.**
- CN-65 board is the printed wiring board which has four layers structure but inner two layers' patterns and component side pattern are omitted.
- ● : Through hole is omitted.

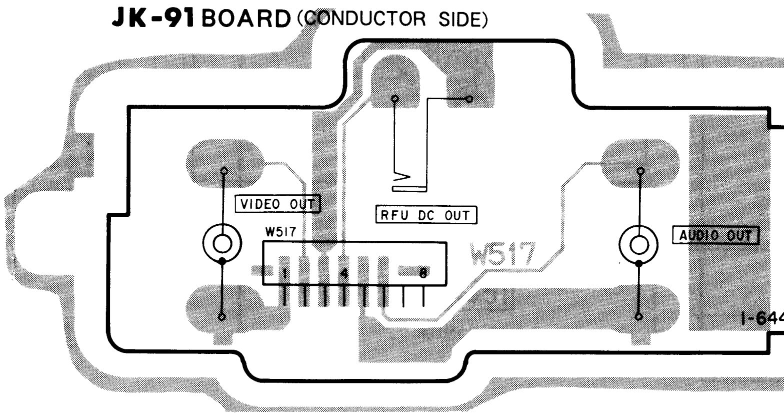
VK-27 BOARD (COMPONENT SIDE)


+
CUE
S981
EDIT SEARCH
S981
−
REV
S978
EDIT SEARCH
S978

VK-27 BOARD (CONDUCTOR SIDE)

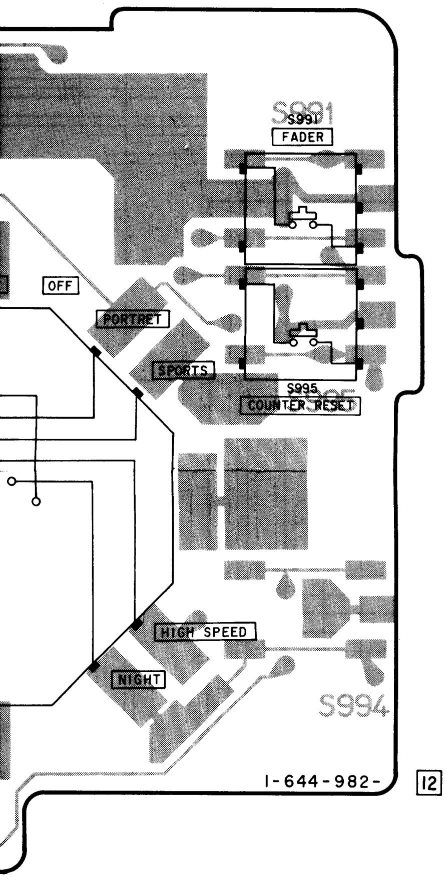


JK-91 BOARD (CONDUCTOR SIDE)

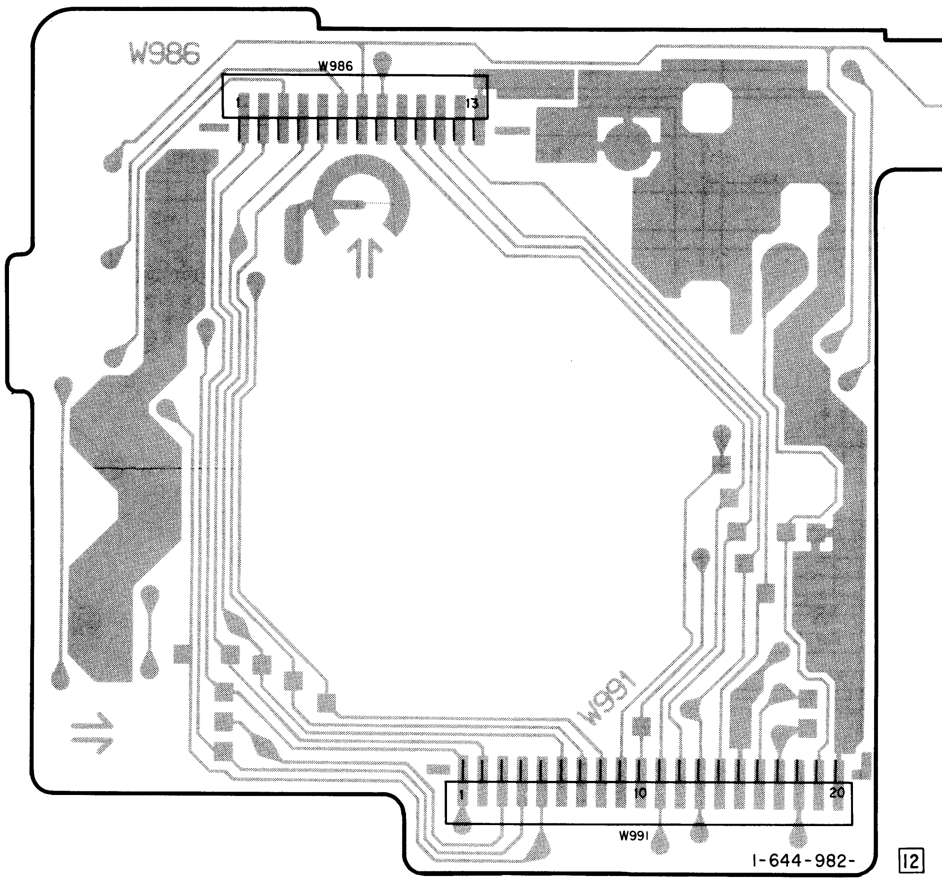

VIDEO OUT
W517
1
4
8
RFU DC OUT
W517
AUDIO OUT
1-644

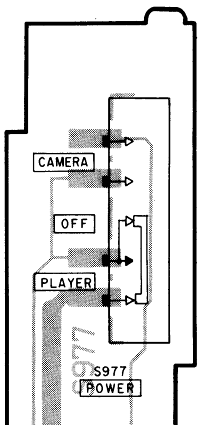
(DIODE)

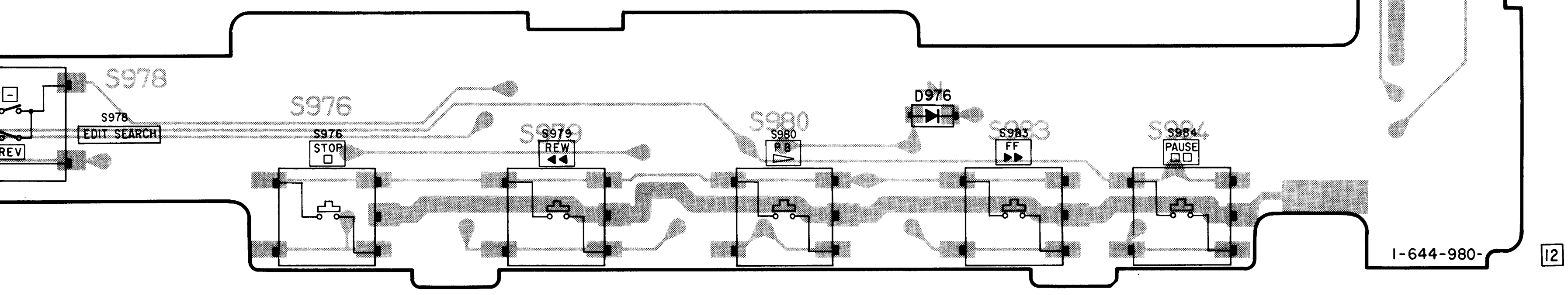
D992 8-719-404-46 DIODE MA110


S991
FADER
OFF
PORTRET
SPORTS
S995
COUNTER RESET
HIGH SPEED
NIGHT
S994
1-644-982-
12

CF-32 BOARD (CONDUCTOR SIDE)

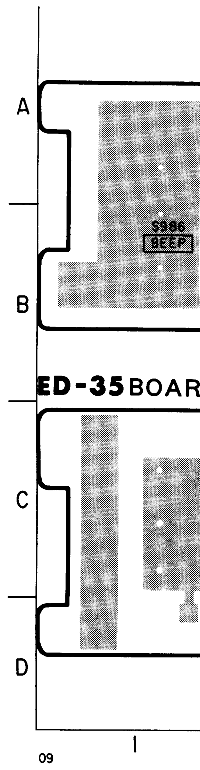

W986
W986
1
13
W991
1
10
20
W991
1-644-982-
12

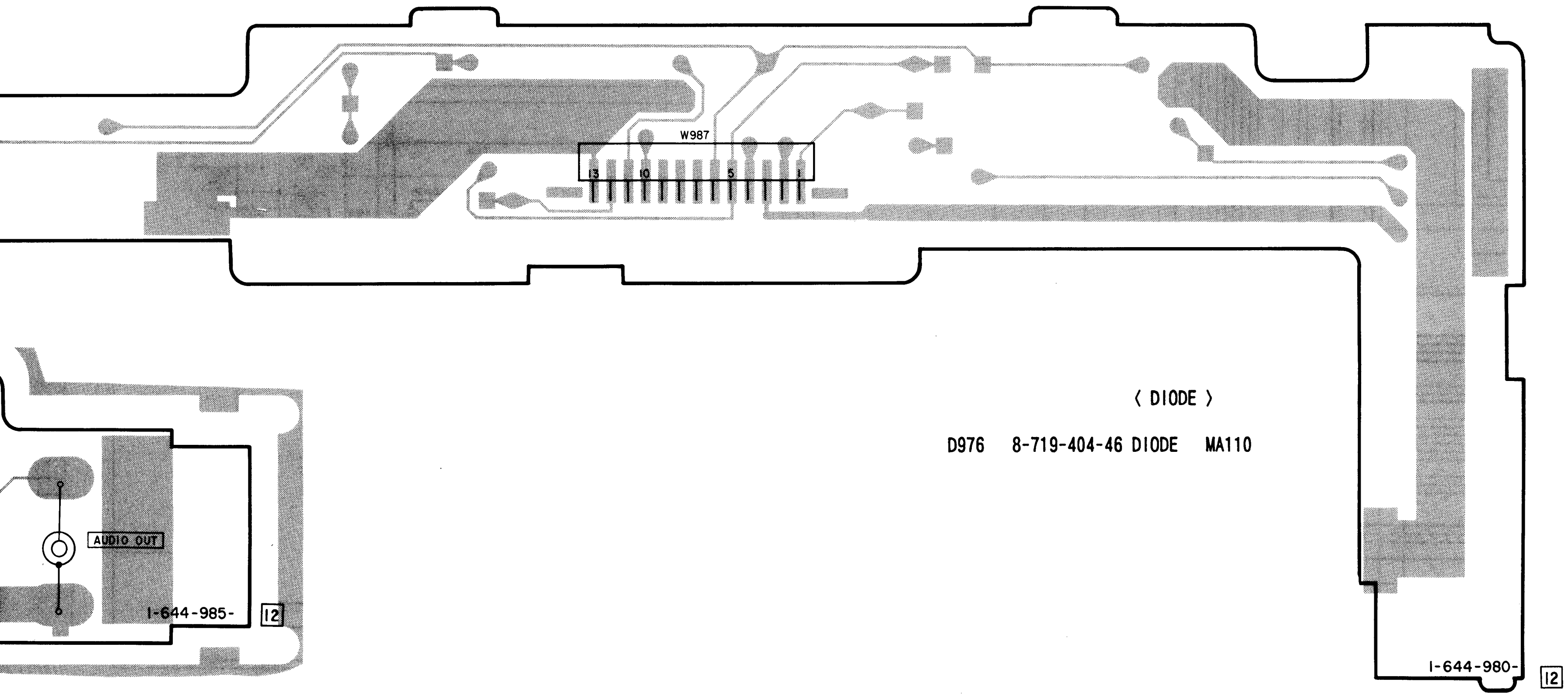

CAMERA
OFF
PLAYER
S977
S977
POWER


S978
S978
EDIT SEARCH
REV
S976
S976
STOP
S979
S979
REW
◀◀
S980
S980
PB
D976
S983
S983
FF
▶▶
S984
S984
PAUSE
1-644-980-
12

ED-35 BOAR

ED-35 BOAR

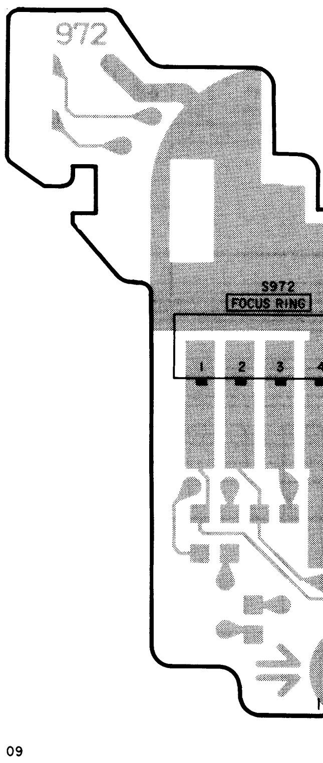

A
S986
BEEP
B
C
D
09

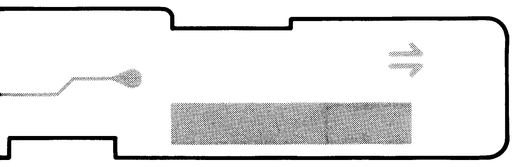

W987
13
10
5
1
AUDIO OUT
1-644-985-
12
1-644-980-
12

(DIODE)

D976 8-719-404-46 DIODE MA110

MF-191 BOARD(COMPONEN


972
S972
FOCUS RING
1
2
3
09

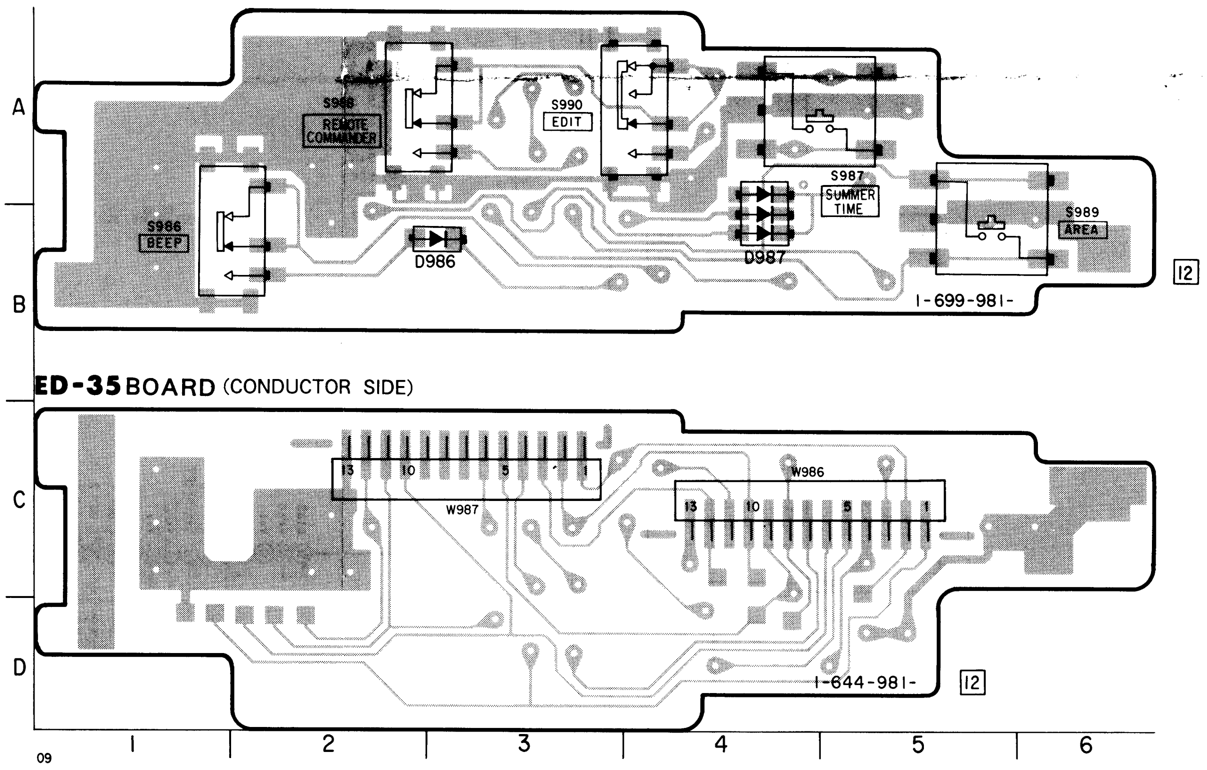


(DIODE)

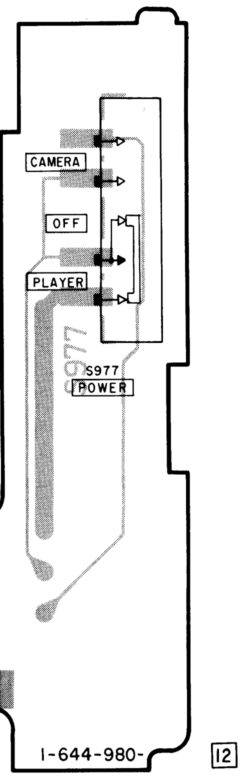
D986	8-719-404-46	DIODE	MA110
D987	8-719-404-40	DIODE	MA121

ED-35 BOARD (COMPONENT SIDE)

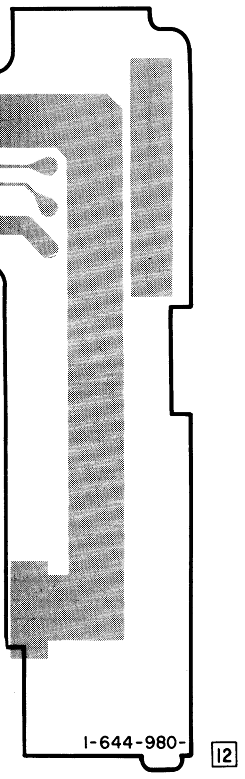
ED-35 BOARD (CONDUCTOR SIDE)



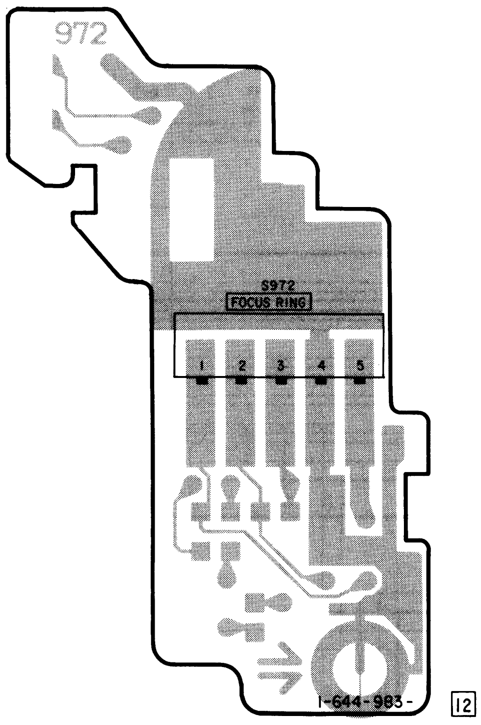
A
B
C
D
S988
REMOTE COMMANDER
S990
EDIT
S987
SUMMER TIME
S986
BEEP
D986
D987
S989
AREA
1-699-981-
12
13
10
5
1
W987
W986
1-644-981-
12
09
1
2
3
4
5
6



CAMERA
OFF
PLAYER
S977
POWER
1-644-980-
12



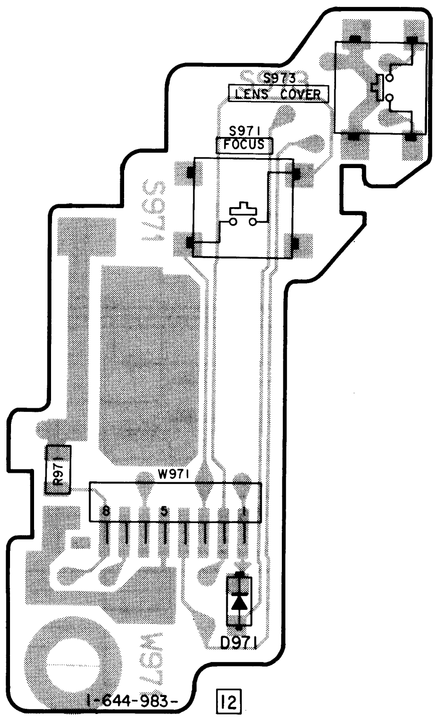
MF-191 BOARD(COMPONENT SIDE)



972
S972
FOCUS RING
1
2
3
4
5
1-644-983-
12

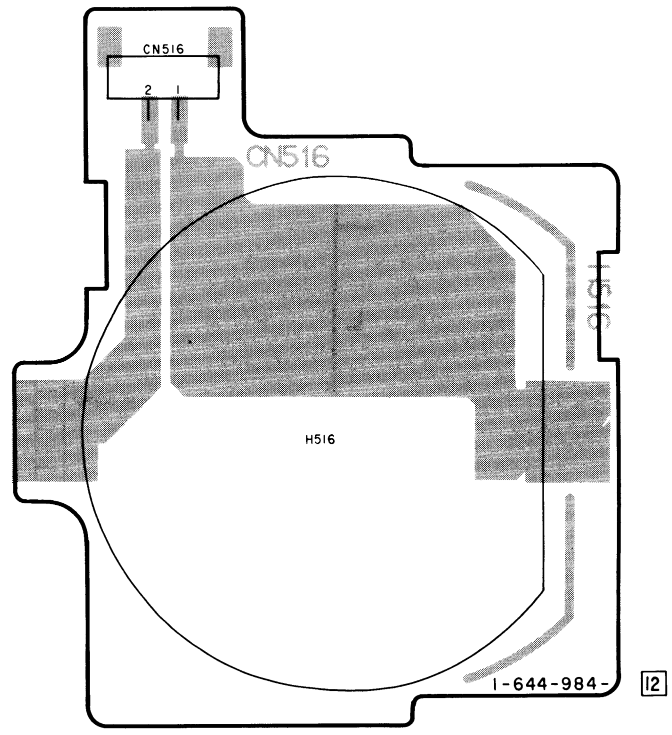
09

MF-191 BOARD (CONDUCTOR SIDE)



S973
LENS COVER
S971
FOCUS
R97
W971
8
5
1
D971
1-644-983-
12

LI-44 BOARD (CONDUCTOR SIDE)



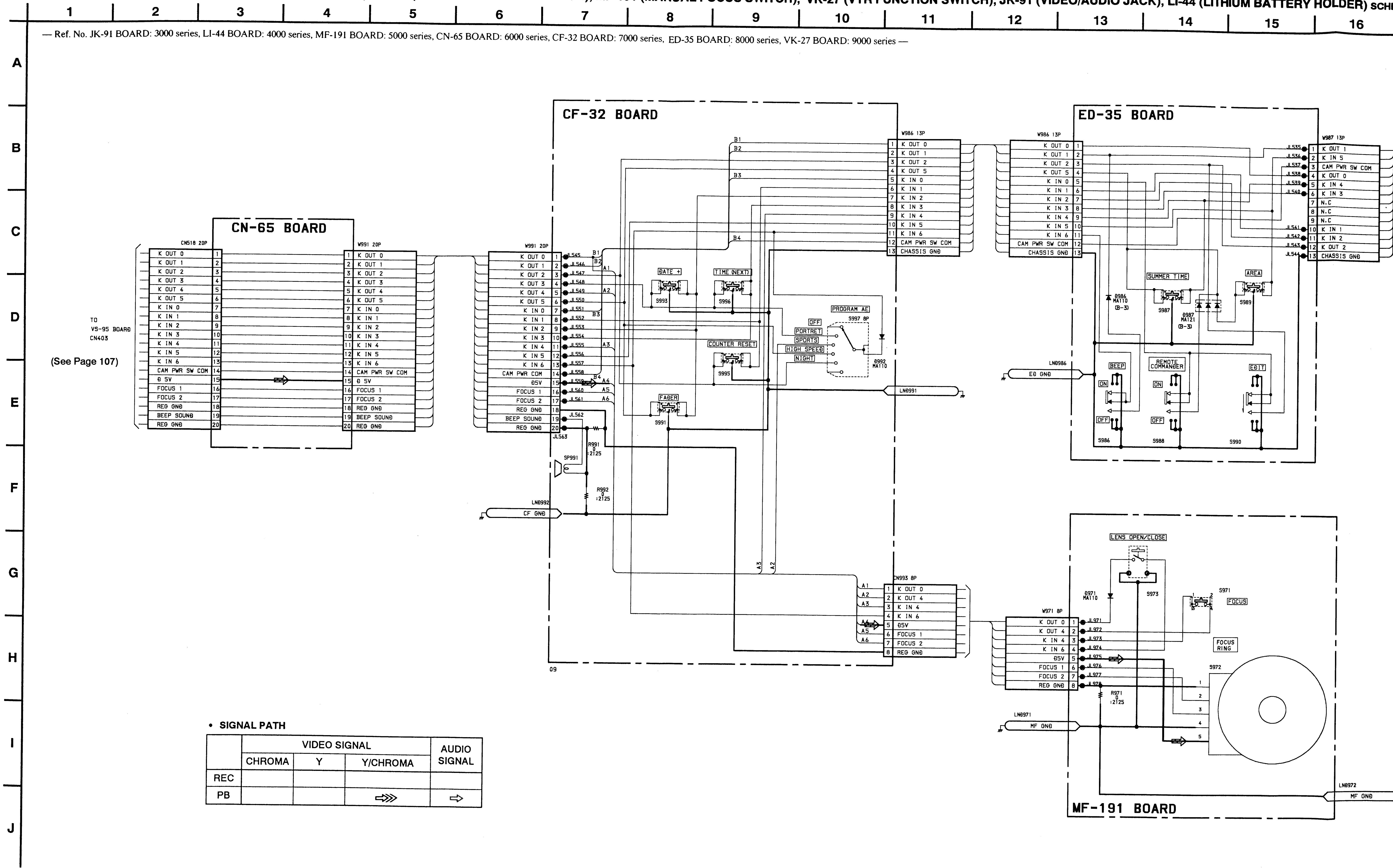
CN516
2
1
CN516
H516
1-644-984-
12

(DIODE)

D971	8-719-404-46	DIODE	MA110

CF-32 (CAMERA FUNCTION SWITCH), CN-65 (BOARD LINK), ED-35 (CAMERA FUNCTION SWITCH), MF-191 (MANUAL FOCUS SWITCH), VK-27 (VTR FUNCTION SWITCH), JK-91 (VIDEO/AUDIO JACK), LI-44 (LITHIUM BATTERY HOLDER) SCH

— Ref. No. JK-91 BOARD: 3000 series, LI-44 BOARD: 4000 series, MF-191 BOARD: 5000 series, CN-65 BOARD: 6000 series, CF-32 BOARD: 7000 series, ED-35 BOARD: 8000 series, VK-27 BOARD: 9000 series —


1
2
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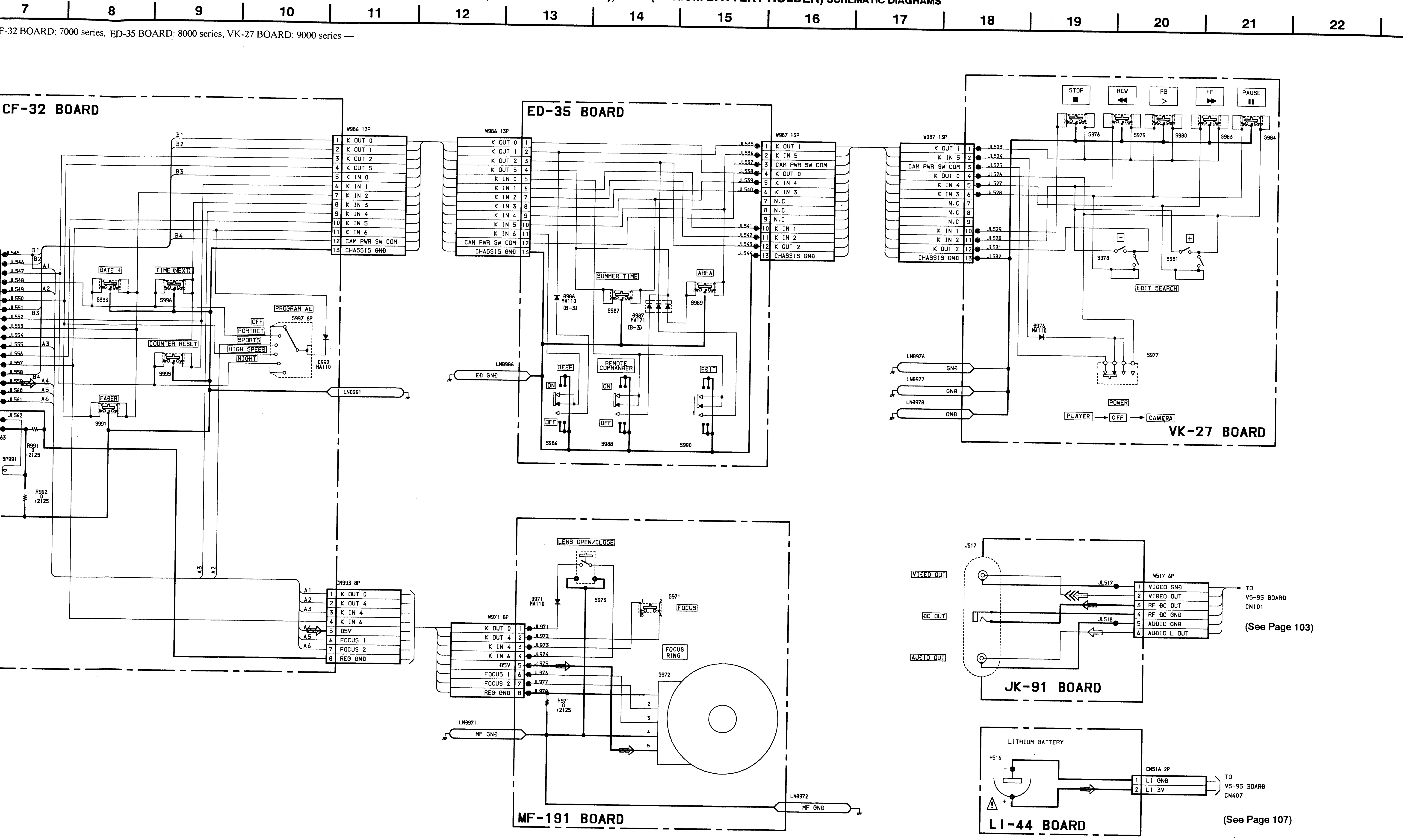
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
TO
VS-95 BOARD
CN403
(See Page 107)
CN-65 BOARD
CN518 20P
W991 20P
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
CAM PWR SW COM
Ə 5V
FOCUS 1
FOCUS 2
REG GND
BEEP SOUND
REG GND
CF-32 BOARD
W991 20P
CAM PWR COM
LND992
CF GND
SP991
R991
R992
DATE +
S993
TIME (NEXT)
S996
COUNTER RESET
S995
FADER
S991
PROGRAM AE
S997 8P
OFF
PORTRET
SPORTS
HIGH SPEED
NIGHT
D992
MA110
W986 13P
CAM PWR SW COM
CHASSIS GND
CN993 8P
LND991
ED-35 BOARD
W986 13P
W987 13P
N.C
K OUT 2
CHASSIS GND
SUMMER TIME
S987
D987
MA121
AREA
S989
D986
MA110
LND986
ED GND
BEEP
ON
OFF
S986
REMOTE COMMANDER
S988
EDIT
S990
MF-191 BOARD
LENS OPEN/CLOSE
S973
D971
MA110
S971
FOCUS
FOCUS RING
S972
W971 8P
R971
LND971
MF GND
LND972

- SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB			⇨≫	⇨

TCH), MF-191 (MANUAL FOCUS SWITCH), VK-27 (VTR FUNCTION SWITCH), JK-91 (VIDEO/AUDIO JACK), LI-44 (LITHIUM BATTERY HOLDER) SCHEMATIC DIAGRAMS

F-32 BOARD: 7000 series, ED-35 BOARD: 8000 series, VK-27 BOARD: 9000 series —


7
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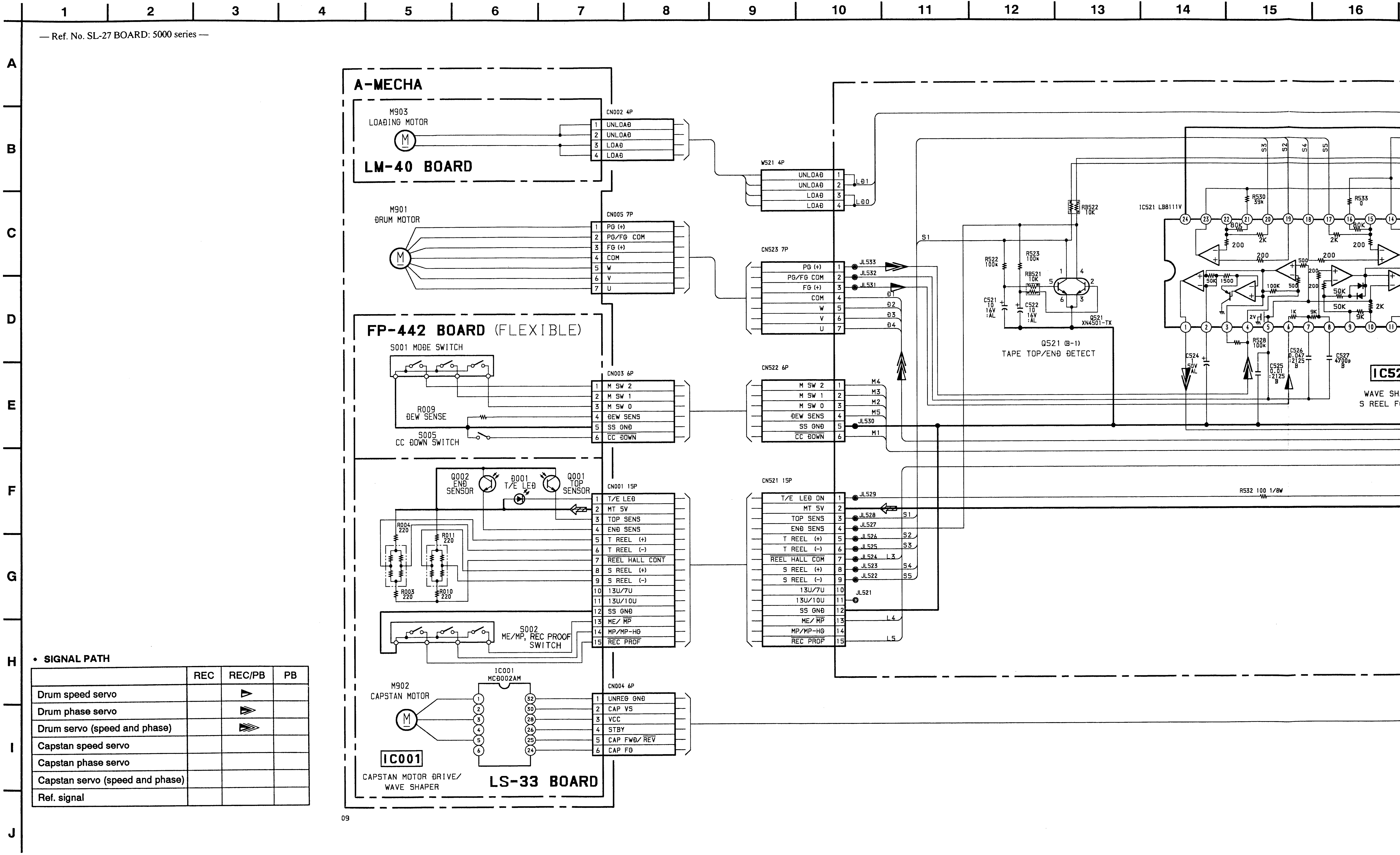
13
14
15
16
17
18
19
20
21
22
CF-32 BOARD
W986 13P
1 K OUT 0
2 K OUT 1
3 K OUT 2
4 K OUT 5
5 K IN 0
6 K IN 1
7 K IN 2
8 K IN 3
9 K IN 4
10 K IN 5
11 K IN 6
12 CAM PWR SW COM
13 CHASSIS GND
B1
B2
B3
B4
A1
A2
A3
A4
A5
A6
DATE +
S993
TIME (NEXT)
S996
PROGRAM AE
S997 8P
OFF
PORTRET
SPORTS
HIGH SPEED
NIGHT
D992 MA110
COUNTER RESET
S995
FADER
S991
LND991
R991 0 :2125
R992 0 :2125
SP991
CN993 8P
1 K OUT 0
2 K OUT 4
3 K IN 4
4 K IN 6
5 Ð5V
6 FOCUS 1
7 FOCUS 2
8 REG GND
ED-35 BOARD
W986 13P
K OUT 0 1
K OUT 1 2
K OUT 2 3
K OUT 5 4
K IN 0 5
K IN 1 6
K IN 2 7
K IN 3 8
K IN 4 9
K IN 5 10
K IN 6 11
CAM PWR SW COM 12
CHASSIS GND 13
D986 MA110 (B-3)
SUMMER TIME
S987
D987 MA121 (B-3)
AREA
S989
LND986
ED GND
BEEP
ON
OFF
S986
REMOTE COMMANDER
S988
EDIT
S990
W987 13P
1 K OUT 1
2 K IN 5
3 CAM PWR SW COM
4 K OUT 0
5 K IN 4
6 K IN 3
7 N.C
8 N.C
9 N.C
10 K IN 1
11 K IN 2
12 K OUT 2
13 CHASSIS GND
VK-27 BOARD
W987 13P
K OUT 1 1
K IN 5 2
CAM PWR SW COM 3
K OUT 0 4
K IN 4 5
K IN 3 6
N.C 7
N.C 8
N.C 9
K IN 1 10
K IN 2 11
K OUT 2 12
CHASSIS GND 13
STOP ■
REW ◀◀
PB ▷
FF ▶▶
PAUSE ❚❚
S976
S979
S980
S983
S984
S978
S981
EDIT SEARCH
D976 MA110
S977
LND976 GND
LND977 GND
LND978 GND
POWER
PLAYER
OFF
CAMERA
MF-191 BOARD
LENS OPEN/CLOSE
S973
D971 MA110
S971
FOCUS
FOCUS RING
S972
W971 8P
K OUT 0 1
K OUT 4 2
K IN 4 3
K IN 6 4
Ð5V 5
FOCUS 1 6
FOCUS 2 7
REG GND 8
R971 0 :2125
LND971 MF GND
LND972 MF GND
JK-91 BOARD
J517
VIDEO OUT
DC OUT
AUDIO OUT
JL517
JL518
W517 6P
1 VIDEO GND
2 VIDEO OUT
3 RF DC OUT
4 RF DC GND
5 AUDIO GND
6 AUDIO L OUT
TO VS-95 BOARD CN101
(See Page 103)
LI-44 BOARD
LITHIUM BATTERY
H516
CN516 2P
1 LI GND
2 LI 3V
TO VS-95 BOARD CN407
(See Page 107)

SL-27 (MECHA CONTROL), FP-442(TAPE SENSOR), LM-40 (LOADING MOTOR DRIVE), LS-33 (CAPSTAN MOTOR DRIVE, TAPE SENSOR) SCHEMATIC DIAGRAMS

— Ref. No. SL-27 BOARD: 5000 series —



1
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9
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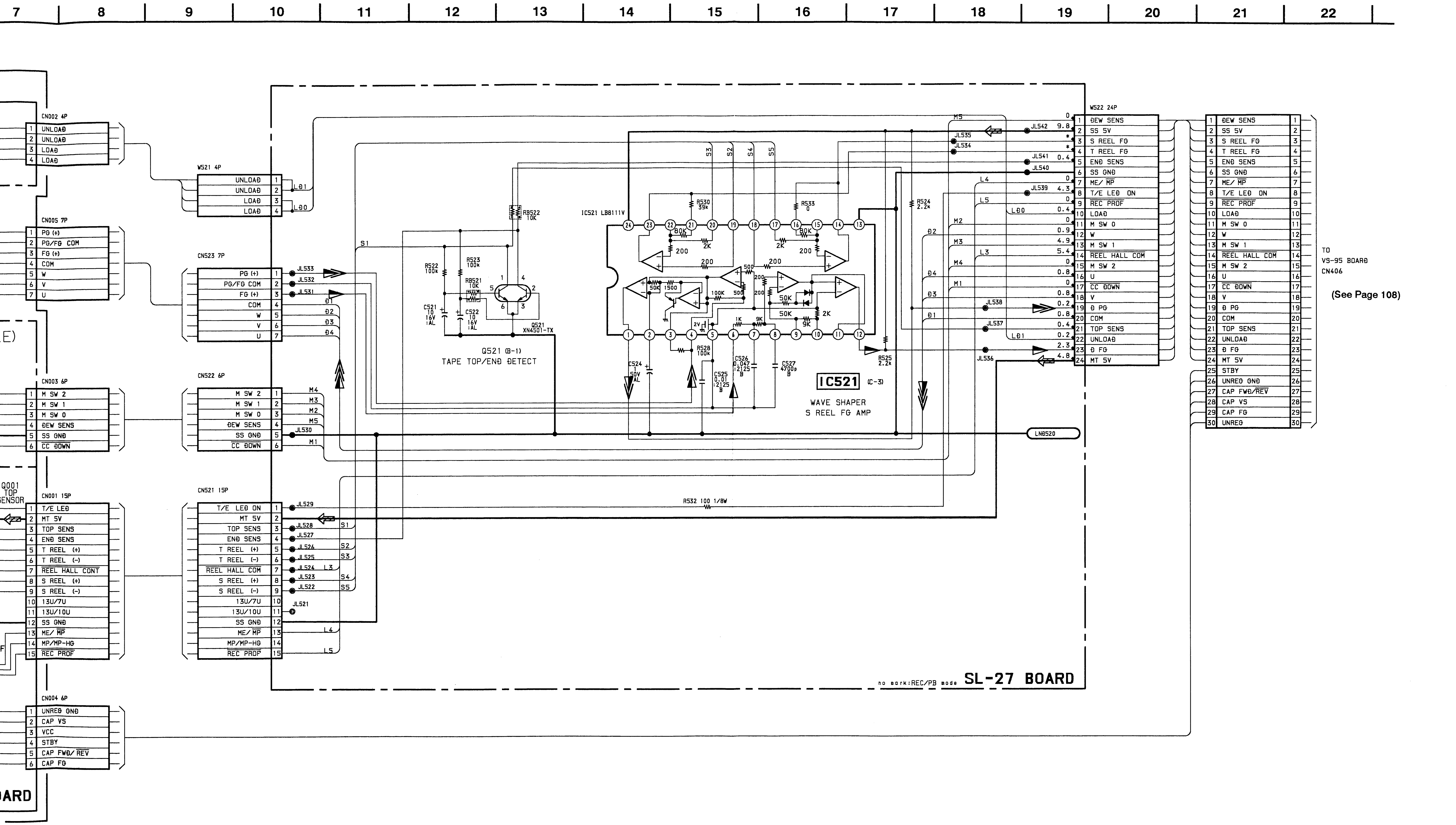
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
A-MECHA
M903
LOADING MOTOR
LM-40 BOARD
CN002 4P
UNLOAD
UNLOAD
LOAD
LOAD
M901
DRUM MOTOR
CN005 7P
PG (+)
PG/FG COM
FG (+)
COM
W
V
U
FP-442 BOARD (FLEXIBLE)
S001 MODE SWITCH
CN003 6P
M SW 2
M SW 1
M SW 0
DEW SENS
SS GND
CC DOWN
R009
DEW SENSE
S005
CC DOWN SWITCH
Q002
END
SENSOR
D001
T/E LED
Q001
TOP
SENSOR
CN001 15P
T/E LED
MT 5V
TOP SENS
END SENS
T REEL (+)
T REEL (-)
REEL HALL CONT
S REEL (+)
S REEL (-)
13U/7U
13U/10U
SS GND
ME/MP
MP/MP-HG
REC PROF
R004 220
R011 220
R003 220
R010 220
S002
ME/MP, REC PROOF
SWITCH
M902
CAPSTAN MOTOR
IC001
MCD002AM
IC001
CAPSTAN MOTOR DRIVE/
WAVE SHAPER
LS-33 BOARD
CN004 6P
UNREG GND
CAP VS
VCC
STBY
CAP FWD/REV
CAP FG
W521 4P
L01
L00
CN523 7P
JL533
JL532
JL531
D1
D2
D3
D4
CN522 6P
M4
M3
M2
M5
JL530
M1
CN521 15P
JL529
JL528
JL527
JL526
JL525
JL524
JL523
JL522
JL521
S1
S2
S3
S4
S5
L3
L4
L5
R522 100k
R523 100k
RB521 10K
RB522 10K
C521 10 16V :AL
C522 10 16V :AL
Q521 XN4501-TX
Q521 (B-1)
TAPE TOP/END DETECT
IC521 LB8111V
R530 39k
R533 0
R528 100k
C524 1 50V :AL
C525 0.01 :2125 B
C526 0.047 :2125 B
C527 4700p B
R532 100 1/8W
IC52
WAVE SH
S REEL F

09

- **SIGNAL PATH**

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷▷	
Drum servo (speed and phase)		▷▷▷	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal			


7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
CN002 4P
UNLOAD
UNLOAD
LOAD
LOAD
CN005 7P
PG (+)
PG/FG COM
FG (+)
COM
W
V
U
CN003 6P
M SW 2
M SW 1
M SW 0
DEW SENS
SS GND
CC DOWN
Q001
TOP
SENSOR
CN001 15P
T/E LED
MT 5V
TOP SENS
END SENS
T REEL (+)
T REEL (-)
REEL HALL CONT
S REEL (+)
S REEL (-)
13U/7U
13U/10U
SS GND
ME/MP
MP/MP-HG
REC PROF
CN004 6P
UNREG GND
CAP VS
VCC
STBY
CAP FWD/REV
CAP FG
ARD
W521 4P
LD1
LD0
CN523 7P
JL533
JL532
JL531
D1
D2
D3
D4
CN522 6P
M4
M3
M2
M5
JL530
M1
CN521 15P
T/E LED ON
JL529
JL528
JL527
JL526
JL525
JL524
JL523
JL522
JL521
S1
S2
S3
S4
S5
L3
L4
L5
R532 100 1/8W
R522 100k
R523 100k
RB521 10K
RB522 10K
C521 10 16V :AL
C522 10 16V :AL
Q521 XN4501-TX
Q521 (B-1)
TAPE TOP/END DETECT
IC521 LB8111V
R530 39k
R533 0
R524 2.2k
R525 2.2k
R528 100k
C524 1 50V AL
C525 0.01 :2125 B
C526 0.047 :2125 B
C527 4700p B
IC521 (C-3)
WAVE SHAPER
S REEL FG AMP
LND520
JL535
JL534
JL542
JL541
JL540
JL539
JL538
JL537
JL536
W522 24P
DEW SENS
SS 5V
S REEL FG
T REEL FG
END SENS
SS GND
ME/MP
T/E LED ON
REC PROF
LOAD
M SW 0
W
M SW 1
REEL HALL COM
M SW 2
U
CC DOWN
V
D PG
COM
TOP SENS
UNLOAD
D FG
MT 5V
STBY
UNREG GND
CAP FWD/REV
CAP VS
CAP FG
UNREG
TO
VS-95 BOARD
CN406
(See Page 108)
no mark:REC/PB mode
SL-27 BOARD

SL-27 (MECHA CONTROL) PRINTED WIRING BOARD

— Ref. No. SL-27 BOARD: 5000 series —

- FP-442, LM-40, LS-33 boards are replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.

- **For printed wiring boards.**
- SL-27 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

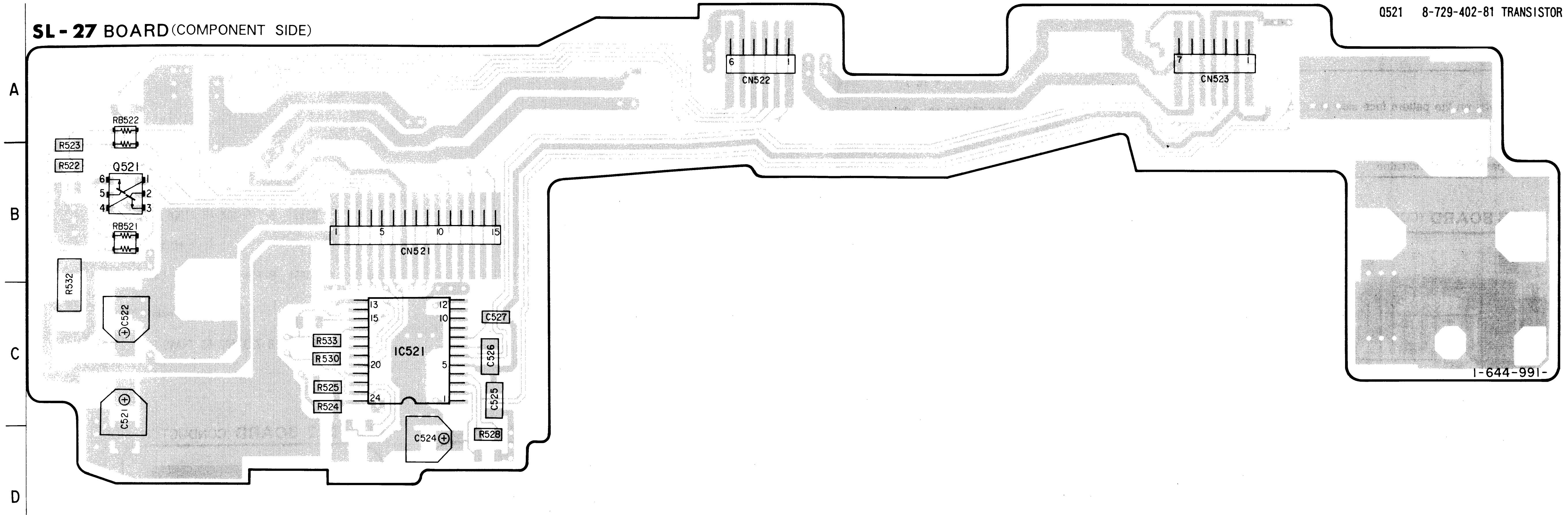
⟨ IC ⟩

IC521 8-759-059-09 IC LB8111V

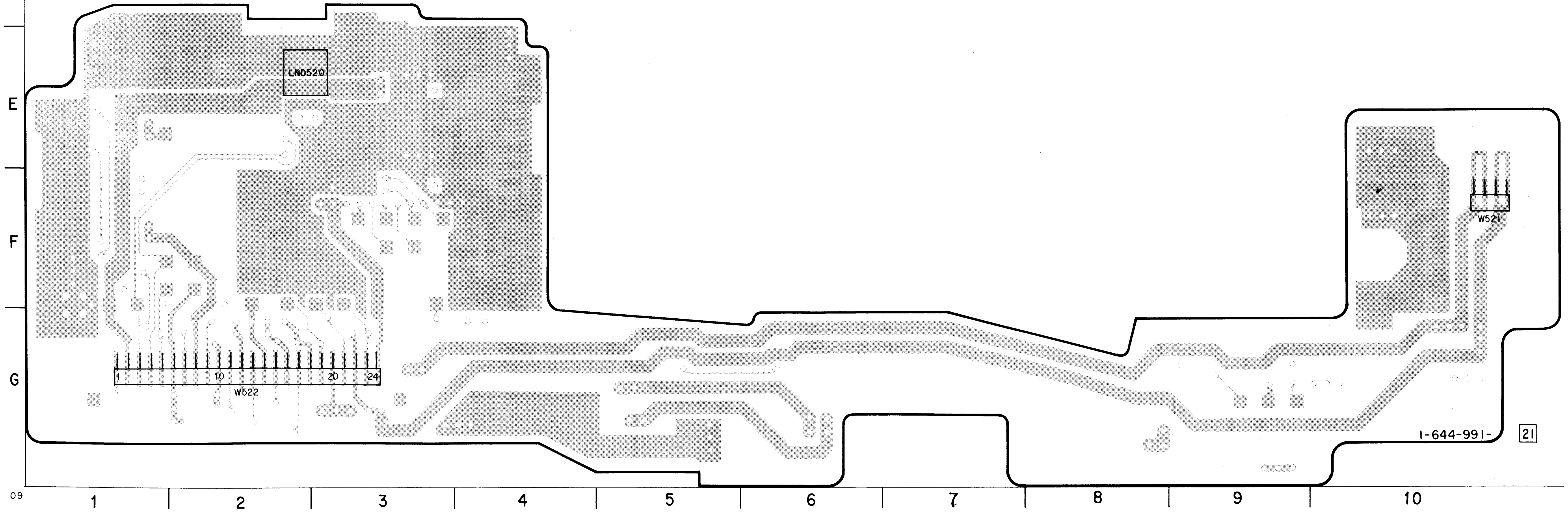
⟨ TRANSISTOR ⟩

Q521 8-729-402-81 TRANSISTOR XN4501

SL-27 BOARD (COMPONENT SIDE)


A
B
C
D
RB522
R523
R522
Q521
6
5
4
1
2
3
RB521
R532
C522
C521
CN521
1
5
10
15
IC521
13
15
20
24
12
10
5
R533
R530
R525
R524
C527
C526
C525
C524
R528
CN522
6
1
CN523
7
1
1-644-991-
21

SL-27 BOARD (CONDUCTOR SIDE)


E
F
G
LND520
W522
1
10
20
24
W521
1-644-991-
21
09
1
2
3
4
5
6
7
8
9
10

AU-138 (AFM AUDIO), MA-149 (MIC JACK, MIC AMP) PRINTED WIRING BOARDS

— Ref. No. AU-138, MA-149 BOARDS: 2000 series —

- **For printed wiring boards.**
- AU-138, MA-149 boards are the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

〈 IC 〉

IC601	8-759-823-19	IC	CXA1488R
IC602	8-749-923-29	IC	RS-20E-T

〈 DIODE 〉

D552	8-719-404-46	DIODE	MA110

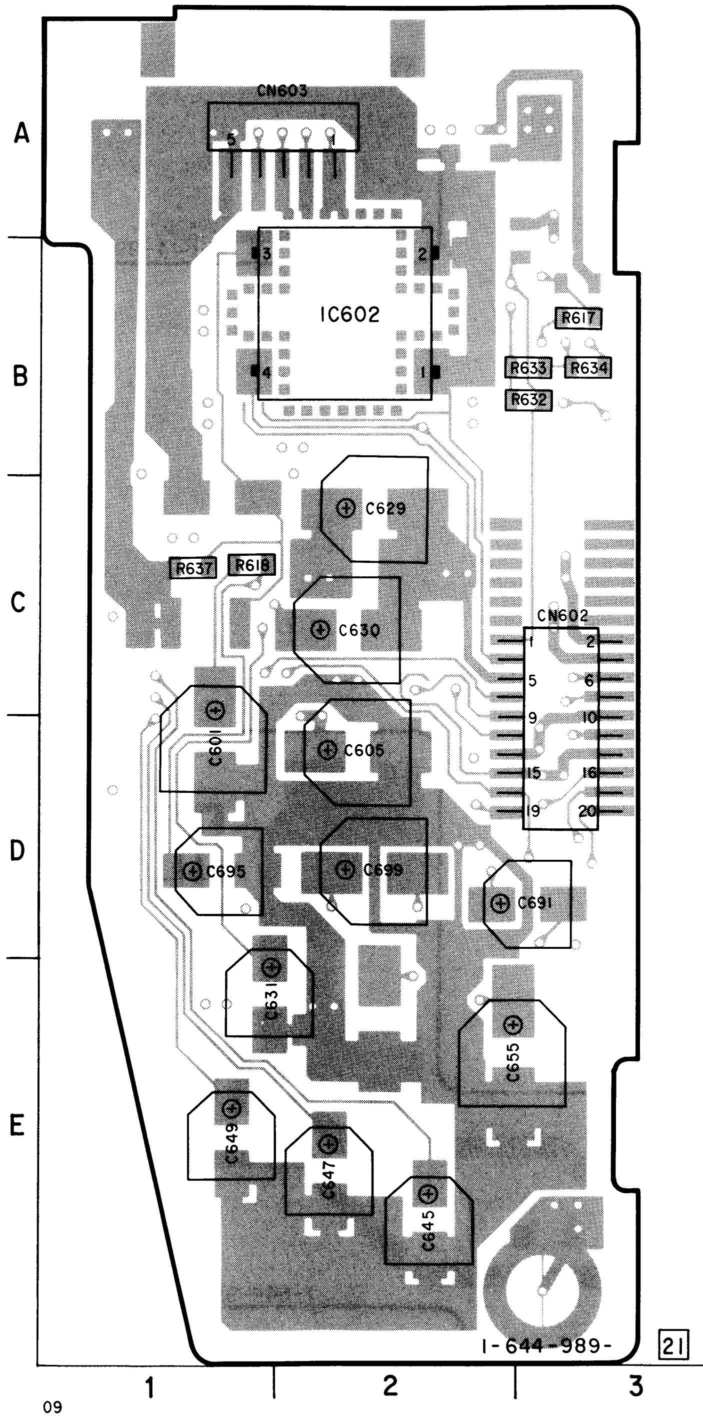
〈 IC 〉

IC551	8-759-822-37	IC	LA7293M

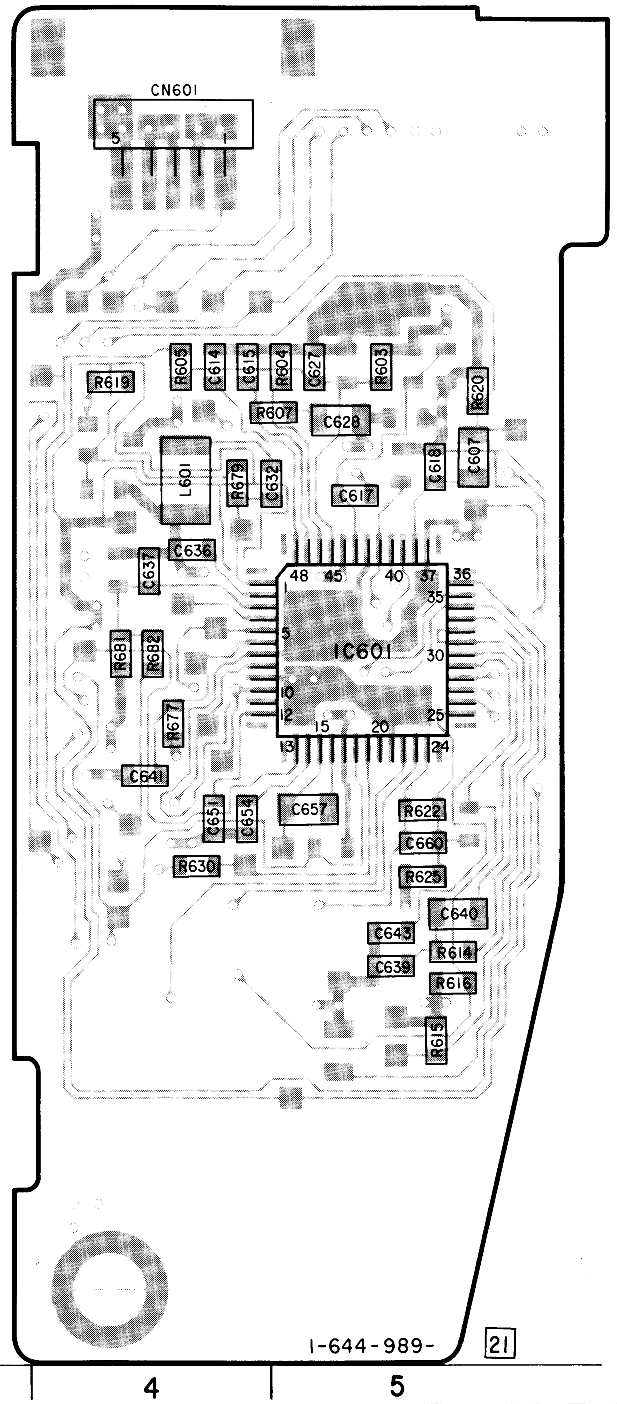
〈 TRANSISTOR 〉

Q551	8-729-402-55	TRANSISTOR	2SB1218A-R

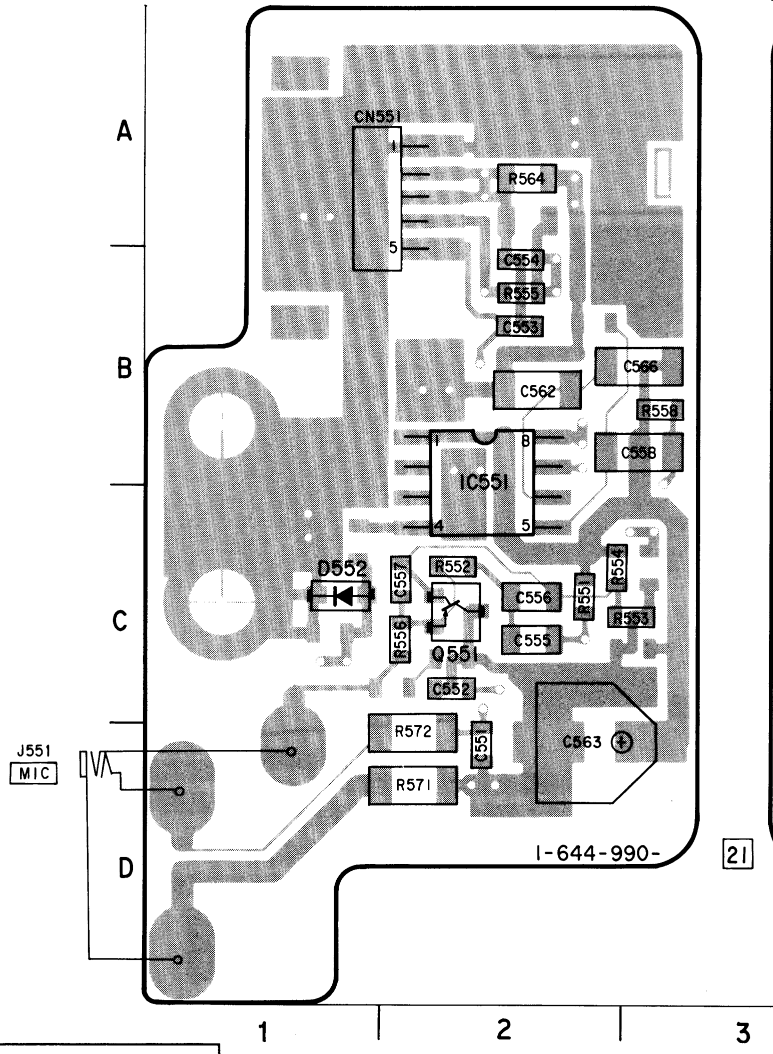
AU-138 BOARD (COMPONENT SIDE)


A
B
C
D
E
CN603
5
1
3
2
4
1
IC602
R617
R633
R634
R632
C629
R637
R618
C630
CN602
1
2
5
6
9
10
15
16
19
20
C601
C605
C695
C699
C691
C631
C655
C649
C647
C645
1-644-989-
21
1
2
3

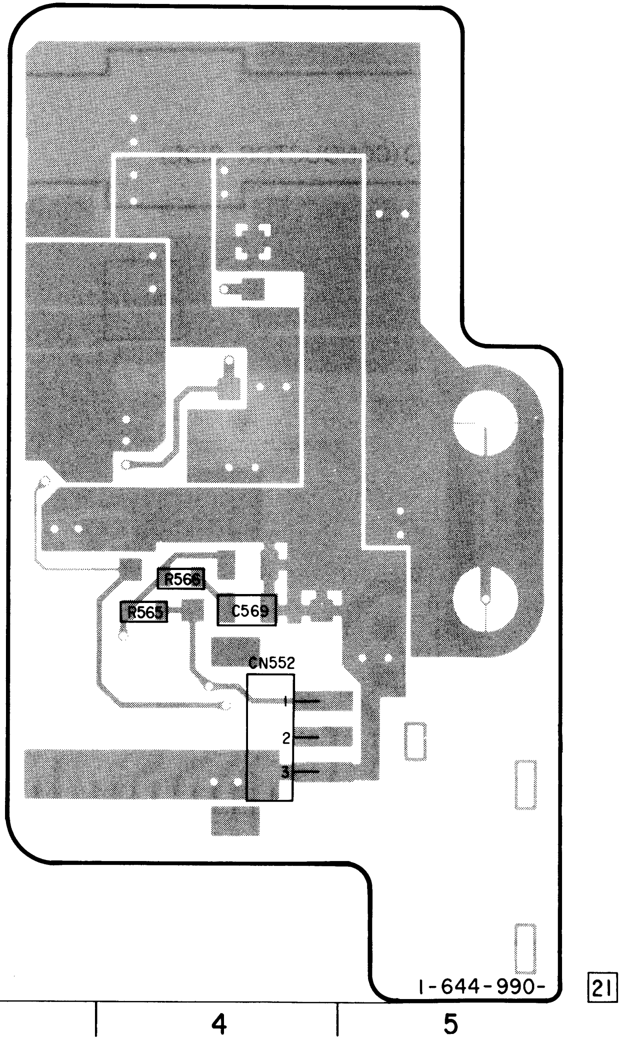
AU-138 BOARD (CONDUCTOR SIDE)


CN601
5
1
R619
R605
C614
C615
R604
C627
R603
R620
R607
C628
L601
R679
C632
C617
C618
C607
C637
C636
48
45
40
37
36
35
1
5
IC601
30
10
12
25
13
15
20
24
R681
R682
R677
C641
C651
C654
C657
R622
C660
R625
R630
C640
C643
R614
C639
R616
R613
1-644-989-
21
4
5

MA-149 BOARD (COMPONENT SIDE)

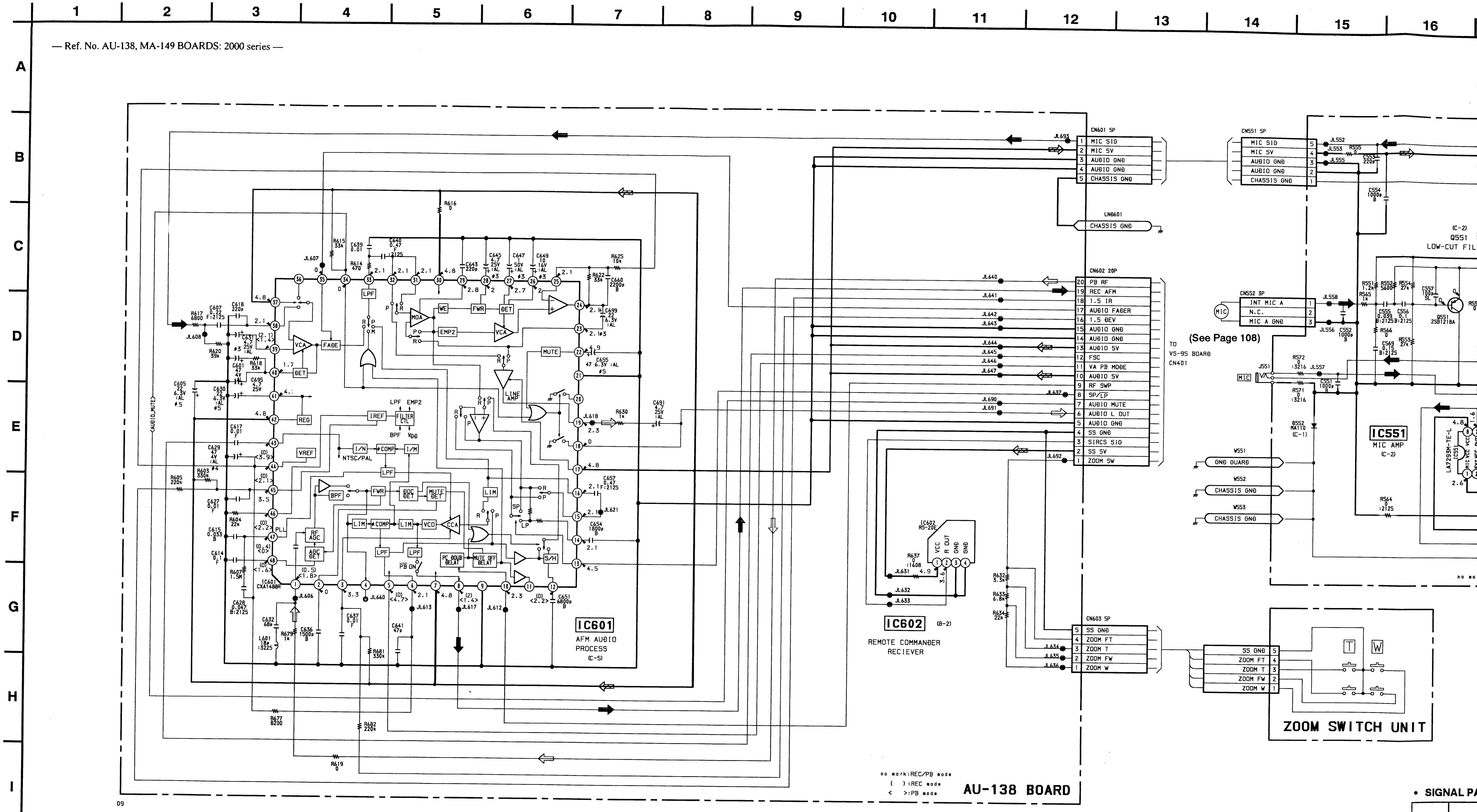

A
B
C
D
CN551
1
5
R564
C554
R555
C553
C566
C562
R558
C558
IC551
1
8
4
5
D552
C557
R552
C556
R551
R554
R553
R556
Q551
C555
C552
R572
C551
C563
R571
J551
MIC
1-644-990-
21
1
2
3

MA-149 BOARD (CONDUCTOR SIDE)


R568
R565
C569
CN552
1
2
3
1-644-990-
21
4
5

AU-138 (AFM AUDIO), MA-149 (MIC JACK, MIC AMP) SCHEMATIC DIAGRAMS

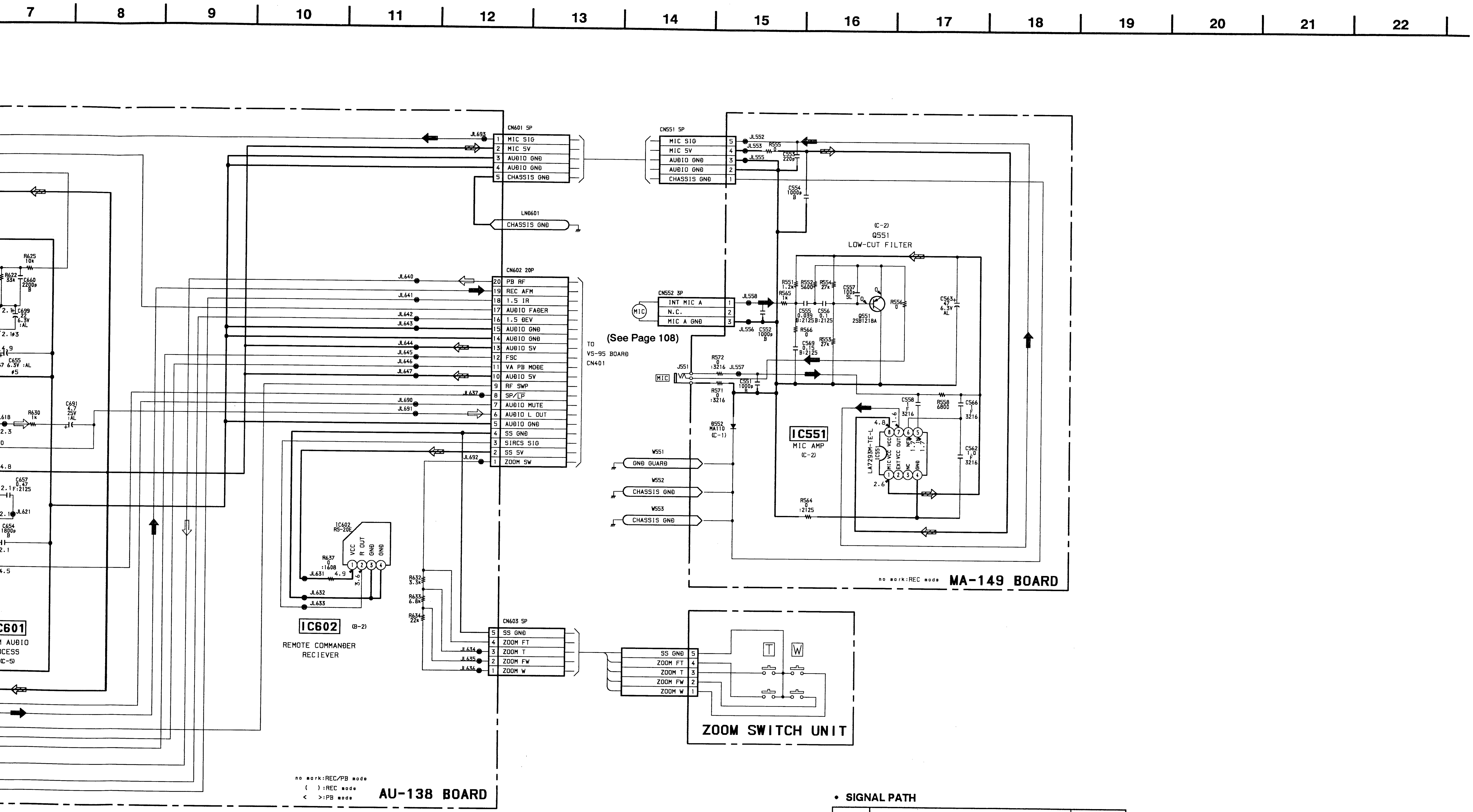
— Ref. No. AU-138, MA-149 BOARDS: 2000 series —



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
IC601
AFM AUDIO PROCESS
(C-5)
IC601 CXA1488R
VCA
FADE
BET
REG
VREF
IREF
FILTER CTL
LPF
EMP2
BPF
VDD
I/N
COMP
I/M
NTSC/PAL
FWR
DOC BET
MUTE BET
LIM
VCO
CCA
RF AGC
AGC BET
PLL
PB ON
PC DOUB BELAY
MUTE OFF BELAY
S/H
MOA
WE
EMP2
MUTE
LINE AMP
SP
LP
CN601 5P
MIC SIG
MIC 5V
AUDIO GND
AUDIO GND
CHASSIS GND
LND601
CHASSIS GND
CN602 20P
PB RF
REC AFM
1.5 IR
AUDIO FADER
1.5 BEV
AUDIO GND
AUDIO GND
AUDIO 5V
FSC
VA PB MODE
AUDIO 5V
RF SWP
SP/LP
AUDIO MUTE
AUDIO L OUT
AUDIO GND
SS GND
SIRCS SIG
SS 5V
ZOOM SW
TO VS-95 BOARD CN401
(See Page 108)
IC602 RS-20E
VCC
R OUT
GND
GND
IC602 (B-2)
REMOTE COMMANDER RECIEVER
CN603 5P
SS GND
ZOOM FT
ZOOM T
ZOOM FW
ZOOM W
no mark:REC/PB mode
( ):REC mode
< >:PB mode
AU-138 BOARD
09
CN551 5P
CN552 3P
INT MIC A
N.C.
MIC A GND
MIC
J551
W551 GND GUARD
W552 CHASSIS GND
W553 CHASSIS GND
IC551
MIC AMP
(C-2)
LA7293M-TE-L
Q551 2SB1218A
LOW-CUT FIL
(C-2)
ZOOM SWITCH UNIT
T
W

• SIGNAL PA

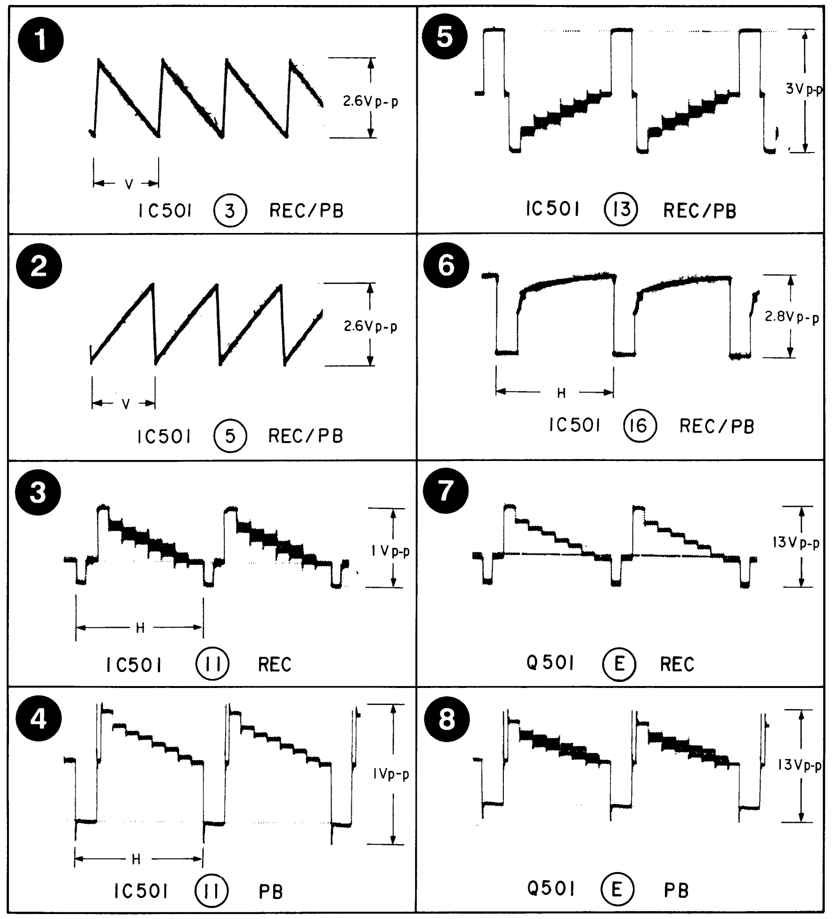
	CHR
REC	
PB	


7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
CN601 5P
1 MIC SIG
2 MIC 5V
3 AUDIO GND
4 AUDIO GND
5 CHASSIS GND
JL693
LND601
CHASSIS GND
CN602 20P
20 PB RF
19 REC AFM
18 1.5 IR
17 AUDIO FADER
16 1.5 DEV
15 AUDIO GND
14 AUDIO GND
13 AUDIO 5V
12 FSC
11 VA PB MODE
10 AUDIO 5V
9 RF SWP
8 SP/LP
7 AUDIO MUTE
6 AUDIO L OUT
5 AUDIO GND
4 SS GND
3 SIRCS SIG
2 SS 5V
1 ZOOM SW
TO VS-95 BOARD CN401
(See Page 108)
IC602 RS-20E
VCC
R OUT
GND
GND
IC602
(B-2)
REMOTE COMMANDER RECIEVER
CN603 5P
5 SS GND
4 ZOOM FT
3 ZOOM T
2 ZOOM FW
1 ZOOM W
IC601
AUDIO
PROCESS
(C-5)
no mark:REC/PB mode
( ):REC mode
< >:PB mode
AU-138 BOARD
CN551 5P
MIC SIG
MIC 5V
AUDIO GND
AUDIO GND
CHASSIS GND
CN552 3P
INT MIC A
N.C.
MIC A GND
MIC
J551
(C-2)
Q551
LOW-CUT FILTER
2SB1218A
IC551
MIC AMP
(C-2)
LA7293M-TE-L
W551
GND GUARD
W552
CHASSIS GND
W553
CHASSIS GND
D552 MA110 (C-1)
no mark:REC mode
MA-149 BOARD
SS GND
ZOOM FT
ZOOM T
ZOOM FW
ZOOM W
T
W
ZOOM SWITCH UNIT

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨

VF-42 BOARD



〈 DIODE 〉

D501	8-719-820-65	DIODE TLS221	
D502	8-719-984-02	LED	BR4371F
D503	8-719-400-20	DIODE MA152WA	

〈 IC 〉

IC501	8-759-420-01	IC AN2512S

〈 TRANSISTOR 〉

Q501	8-729-100-66	TRANSISTOR 2SC1623
Q502	8-729-216-31	TRANSISTOR 2SA1163-G
Q504	8-729-106-68	TRANSISTOR 2SD1615A-GP

- **For printed wiring boards.**

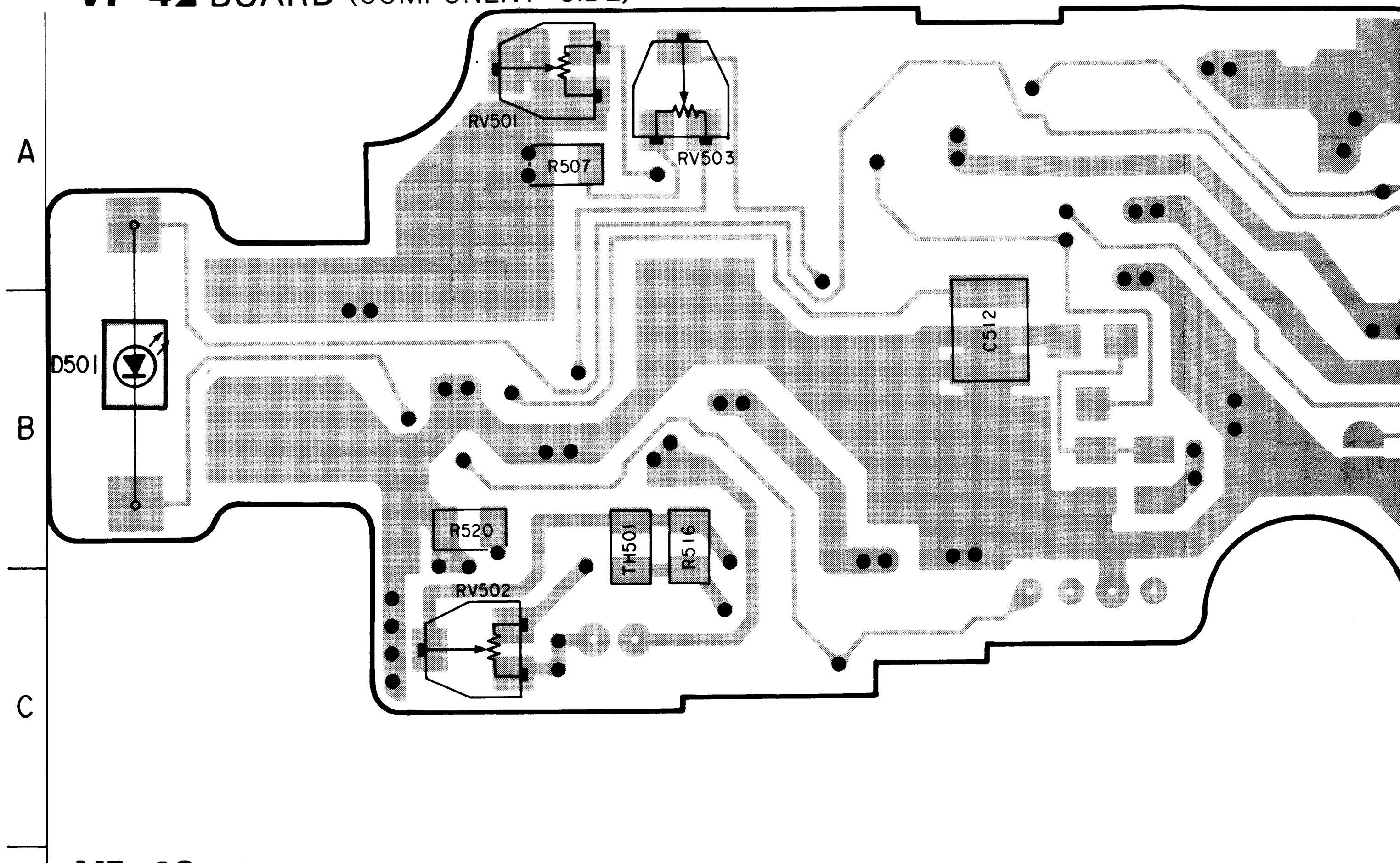
Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

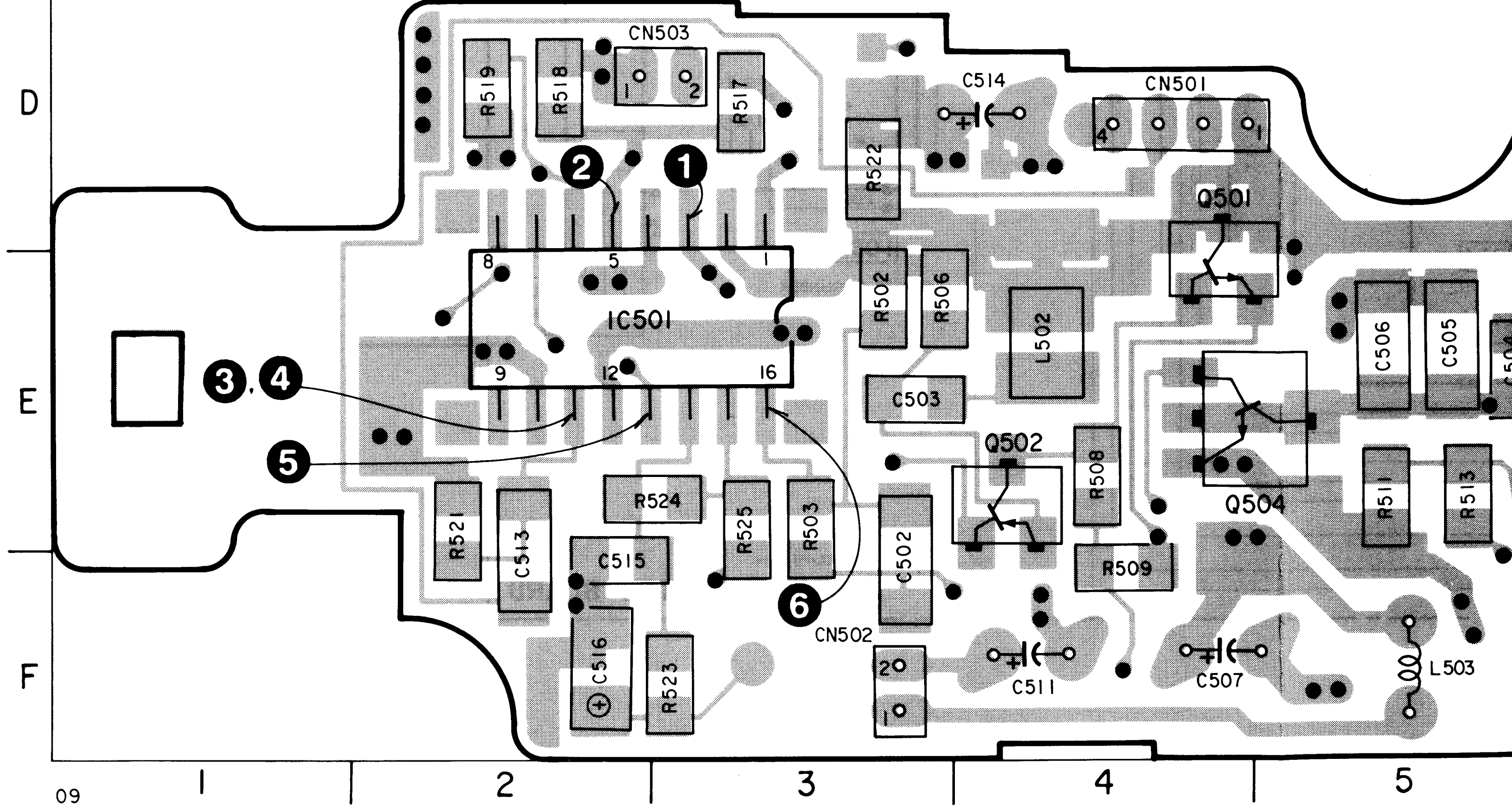
VF-42 (VIEW FINDER) PRINTED WIRING BOARD

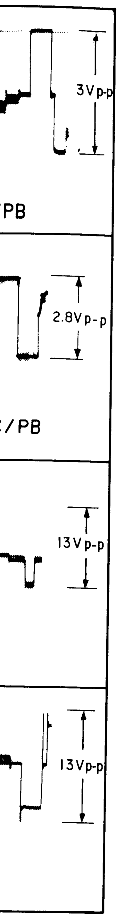
— Ref. No. VF-42 BOARD: 1000 series —

VF-42 BOARD (COMPONENT SIDE)


A
B
C
RV501
R507
RV503
D501
C512
R520
TH501
R516
RV502

VF-42 BOARD (CONDUCTOR SIDE)


D
E
F
R519
R518
CN503
R517
C514
CN501
R522
2
1
8
5
1
IC501
9
12
16
R502
R506
L502
Q501
C506
C505
3, 4
5
C503
Q502
R508
Q504
R524
R521
C513
C515
R525
R503
C502
R509
R511
R513
6
CN502
C516
R523
C511
C507
L503
09
1
2
3
4
5



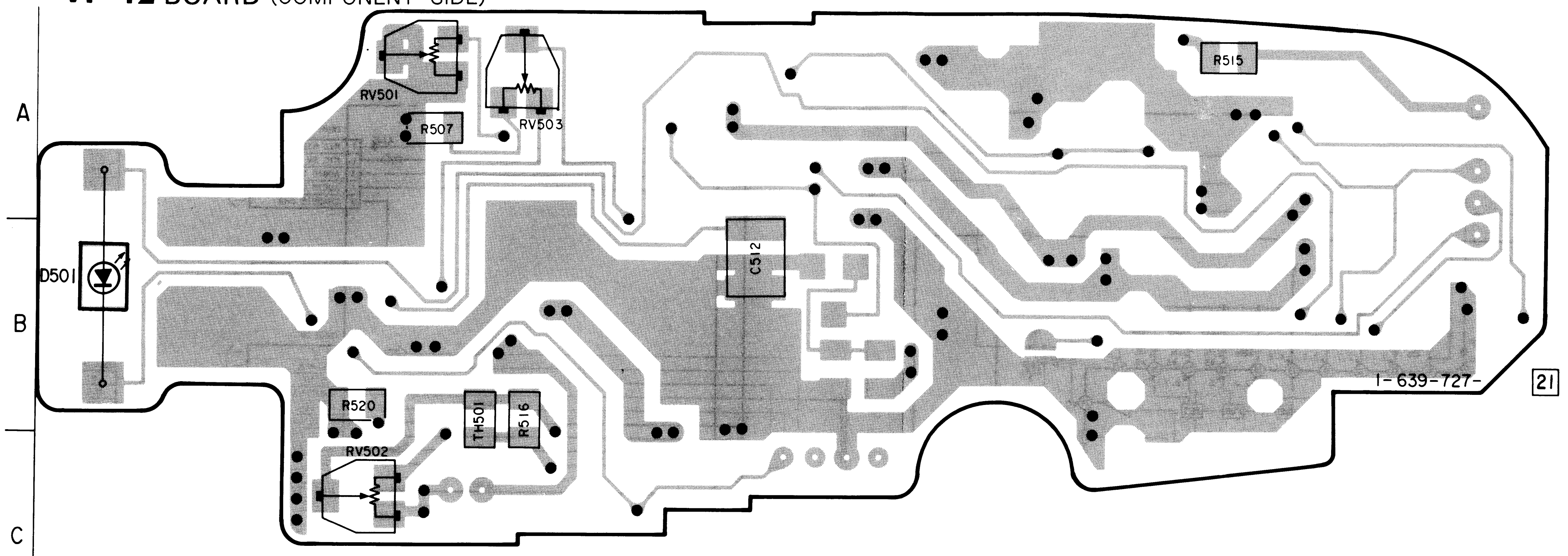
en from

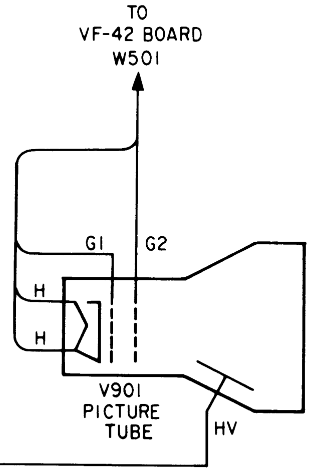
rom the

VF-42 (VIEW FINDER) PRINTED WIRING BOARD

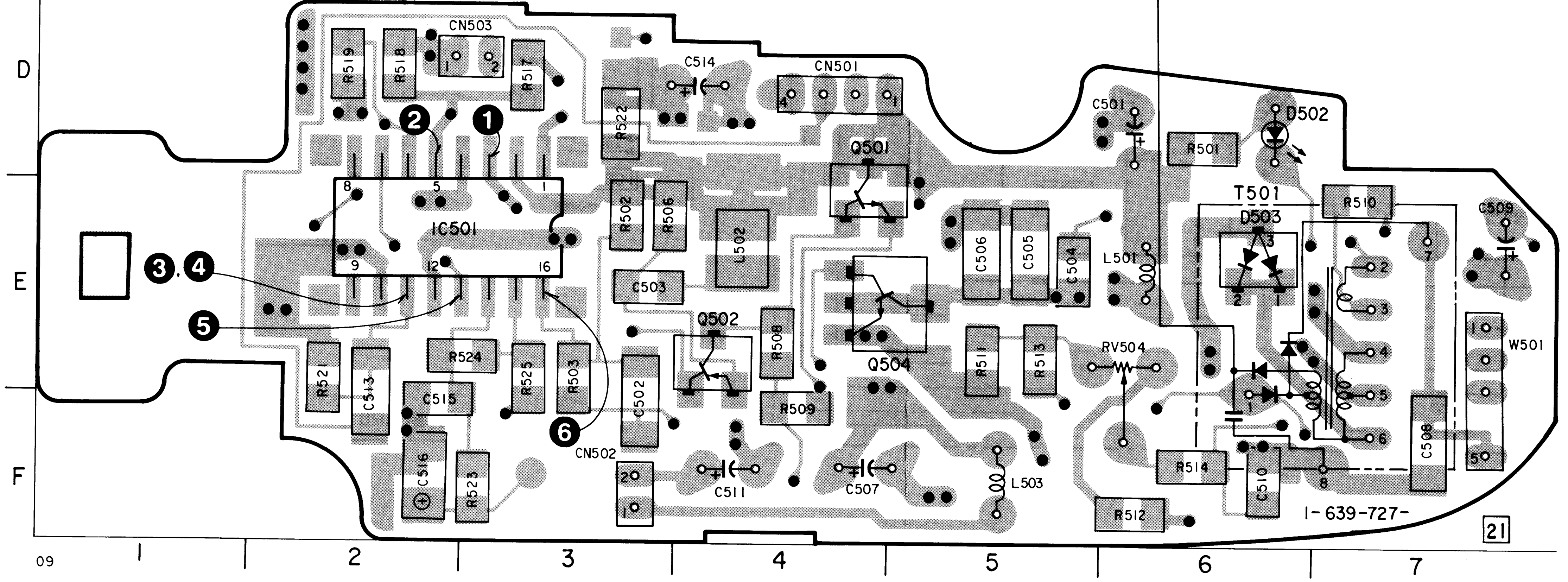
— Ref. No. VF-42 BOARD: 1000 series —

VF-42 BOARD (COMPONENT SIDE)


A
B
C
RV501
RV503
R507
R515
D501
C512
R520
TH501
R516
RV502
1-639-727-
21

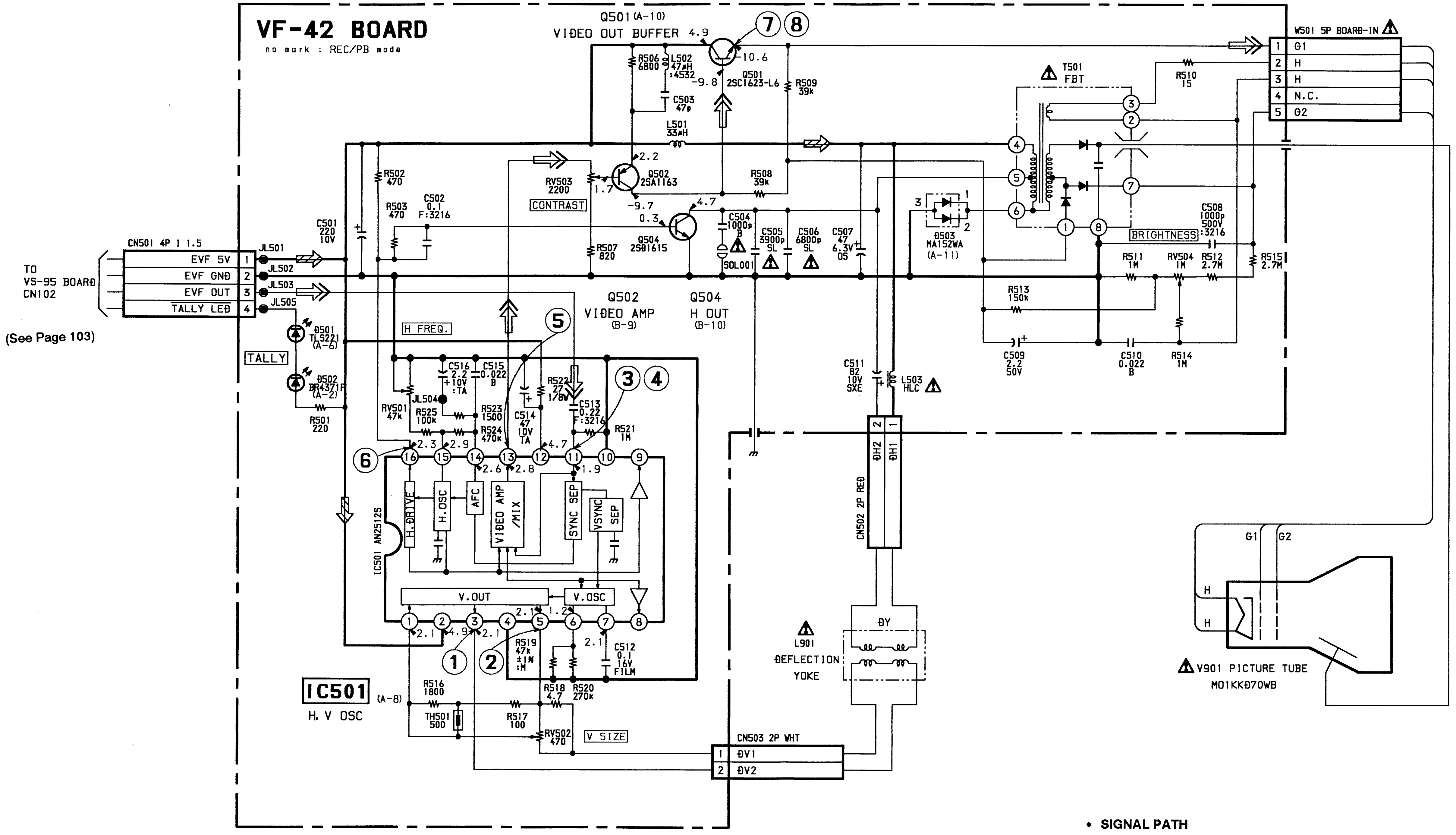

TO
VF-42 BOARD
W501
G1
G2
H
H
V901
PICTURE
TUBE
HV

VF-42 BOARD (CONDUCTOR SIDE)


D
E
F
R519
R518
CN503
1
2
R517
C514
CN501
4
1
2
1
R522
Q501
C501
R501
D502
8
5
1
IC501
9
12
16
3, 4
5
R502
R506
L502
C503
Q502
R508
Q504
C506
C505
C504
L501
T501
D503
R510
C509
3
2
3
4
5
6
7
8
W501
1
5
R511
R513
RV504
R521
C513
C515
R524
R525
R503
6
CN502
C502
R509
C516
R523
2
1
C511
C507
L503
R514
C510
C508
R512
1-639-727-
21
09
1
2
3
4
5
6
7

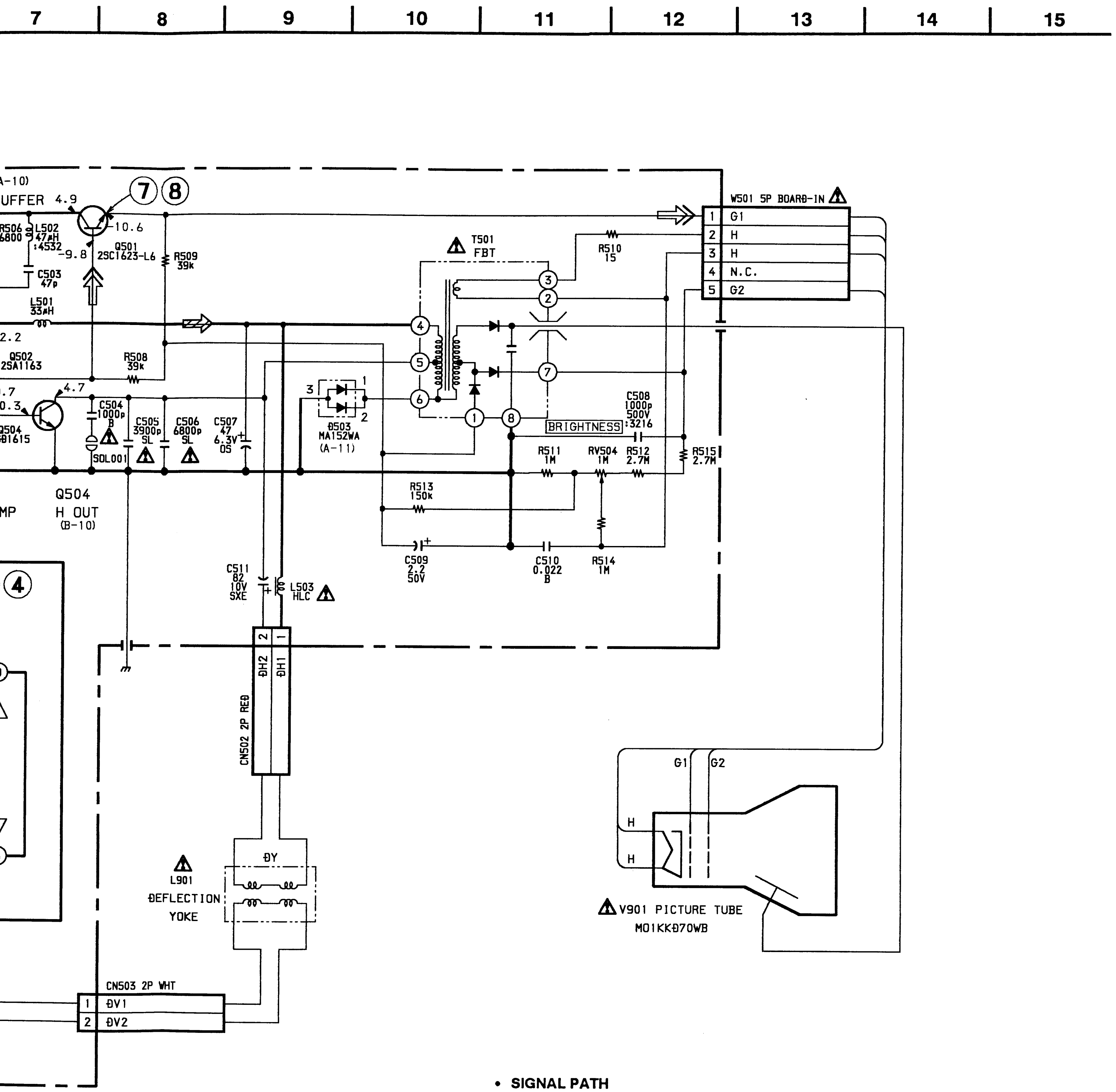
VF-42 (VIEW FINDER) SCHEMATIC DIAGRAM

— Ref. No. VF-42 BOARD: 1000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
VF-42 BOARD
no mark : REC/PB mode
Q501 (A-10)
VIDEO OUT BUFFER
⑦⑧
R506 6800
L502 47μH :4532
Q501 2SC1623-L6
R509 39k
C503 47p
L501 33μH
Q502 2SA1163
RV503 2200
CONTRAST
R508 39k
Q504 2SD1615
C504 1000p B
C505 3900p SL
C506 6800p SL
C507 47 6.3V OS
SOL001
R502 470
R503 470
C502 0.1 F:3216
C501 220 10V
R507 820
Q502 VIDEO AMP (B-9)
Q504 H OUT (B-10)
CN501 4P I 1.5
EVF 5V
EVF GND
EVF OUT
TALLY LED
JL501
JL502
JL503
JL505
TO VS-95 BOARD CN102
(See Page 103)
D501 TLS221 (A-6)
D502 BR4371F (A-2)
R501 220
TALLY
H FREQ.
⑤
C516 2.2 10V :TA
C515 0.022 B
R522 27 1/8W
C513 0.22 F:3216
③④
JL504
RV501 47k
R525 100k
R523 1500
R524 470k
C514 47 10V TA
R521 1M
⑥
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
IC501 AN2512S
① ②
R519 47k ±1% :M
C512 0.1 16V FILM
R518 4.7
R520 270k
R516 1800
TH501 500
R517 100
RV502 470
V SIZE
IC501 (A-8)
H, V OSC
CN503 2P WHT
ΘV1
ΘV2
CN502 2P RED
ΘH1
ΘH2
C511 82 10V SXE
L503 HLC
L901 DEFLECTION YOKE
ΘY
T501 FBT
D503 MA152WA (A-11)
R513 150k
C509 2.2 50V
C510 0.022 B
R514 1M
R511 1M
RV504 1M
R512 2.7M
R515 2.7M
C508 1000p 500V :3216
BRIGHTNESS
R510 15
W501 5P BOARD-IN
G1
H
H
N.C.
G2
V901 PICTURE TUBE M01KKD70WB
09

• **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB		⇨		


7
8
9
10
11
12
13
14
15
(A-10)
UFFER 4.9
⑦⑧
-10.6
-9.8
Q501
2SC1623-L6
R506
6800
L502
47μH
:4532
R509
39k
C503
47p
L501
33μH
2.2
Q502
2SA1163
R508
39k
4.7
.7
0.3
Q504
B1615
C504
1000p
B
C505
3900p
SL
C506
6800p
SL
C507
47
6.3V
OS
SDL001
Q504
H OUT
(B-10)
MP
T501
FBT
R510
15
W501 5P BOARD-IN
1 G1
2 H
3 H
4 N.C.
5 G2
3
1
2
D503
MA152WA
(A-11)
BRIGHTNESS
C508
1000p
500V
:3216
R511
1M
RV504
1M
R512
2.7M
R515
2.7M
R513
150k
C509
2.2
50V
C510
0.022
B
R514
1M
C511
82
10V
SXE
L503
HLC
④
CN502 2P RED
2 ƉH2
1 ƉH1
ƉY
L901
DEFLECTION
YOKE
CN503 2P WHT
1 ƉV1
2 ƉV2
G1
G2
H
H
V901 PICTURE TUBE
M01KKD70WB

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB		⇨		

DD-48 (POWER), SW-205 (CAMERA FUNCTION SWITCH) PRINTED WIRING BOARDS

— Ref. No. DD-48 BOARD: 1000 series, SW-205 BOARD: 7000 series —

- **For printed wiring boards.**
- **DD-48** board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

〈 DIODE 〉

D901	8-719-981-59	DIODE FC805
D905	8-719-404-46	DIODE MA110
D906	8-719-404-46	DIODE MA110

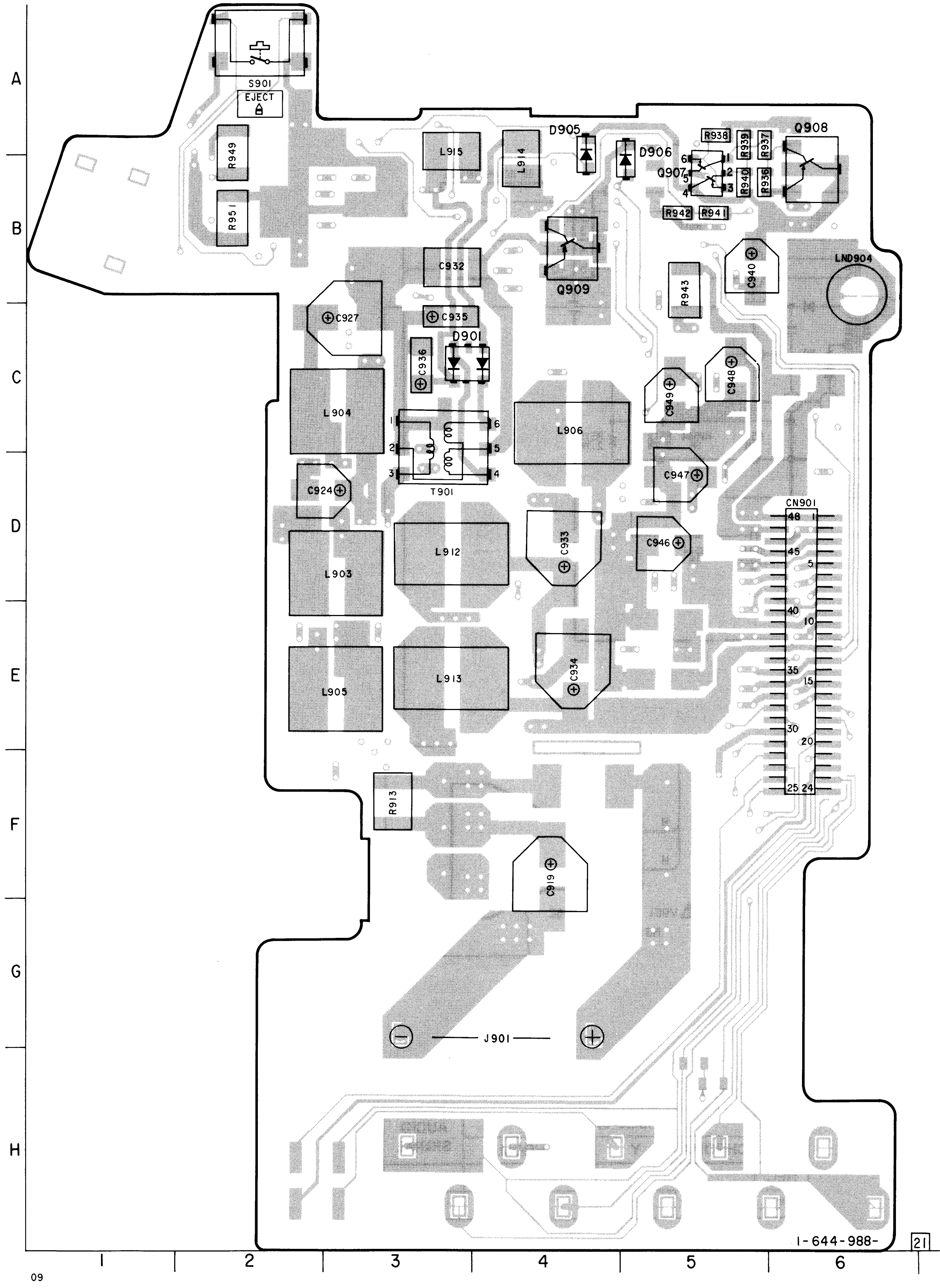
〈 IC 〉

IC901	8-759-060-94	IC MB3785APFV-G-BND-ER

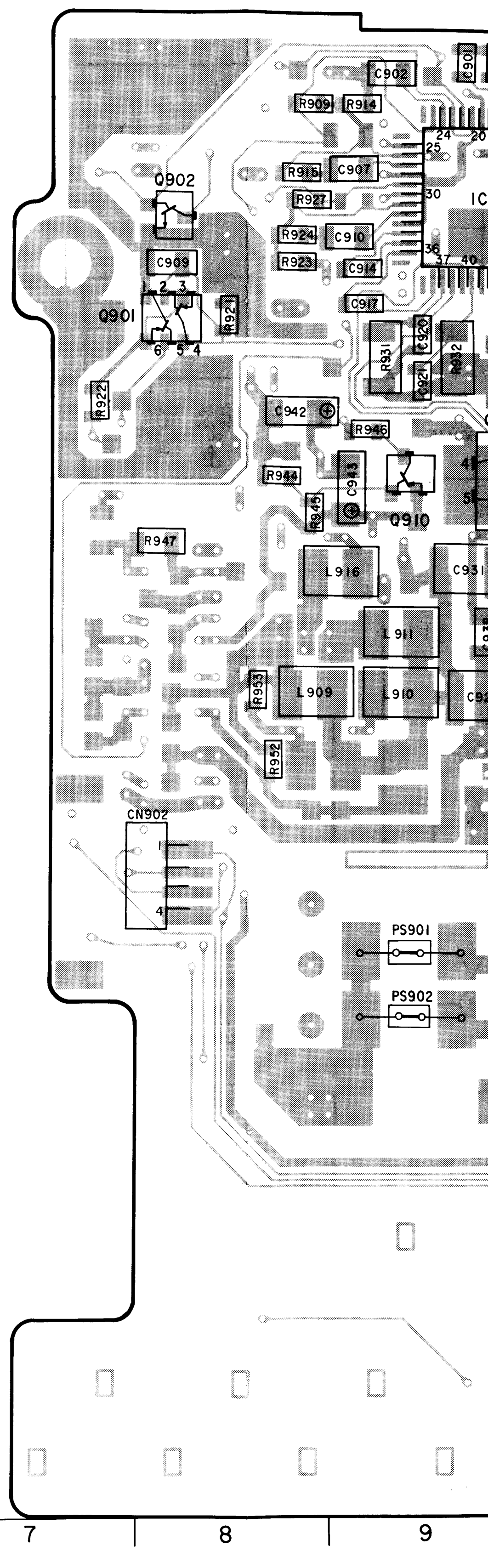
〈 TRANSISTOR 〉

Q901	8-729-403-27	TRANSISTOR XN4401
Q902	8-729-402-42	TRANSISTOR UN5213
Q903	8-729-823-84	TRANSISTOR FP102
Q904	8-729-804-41	TRANSISTOR 2SB1122-S
Q905	8-729-823-82	TRANSISTOR FP101
Q906	8-729-823-82	TRANSISTOR FP101
Q907	8-729-402-81	TRANSISTOR XN4501
Q908	8-729-805-25	TRANSISTOR 2SB1121
Q909	8-729-805-25	TRANSISTOR 2SB1121
Q910	8-729-014-20	TRANSISTOR RN2304

DD-48 BOARD(COMPONENT SIDE)

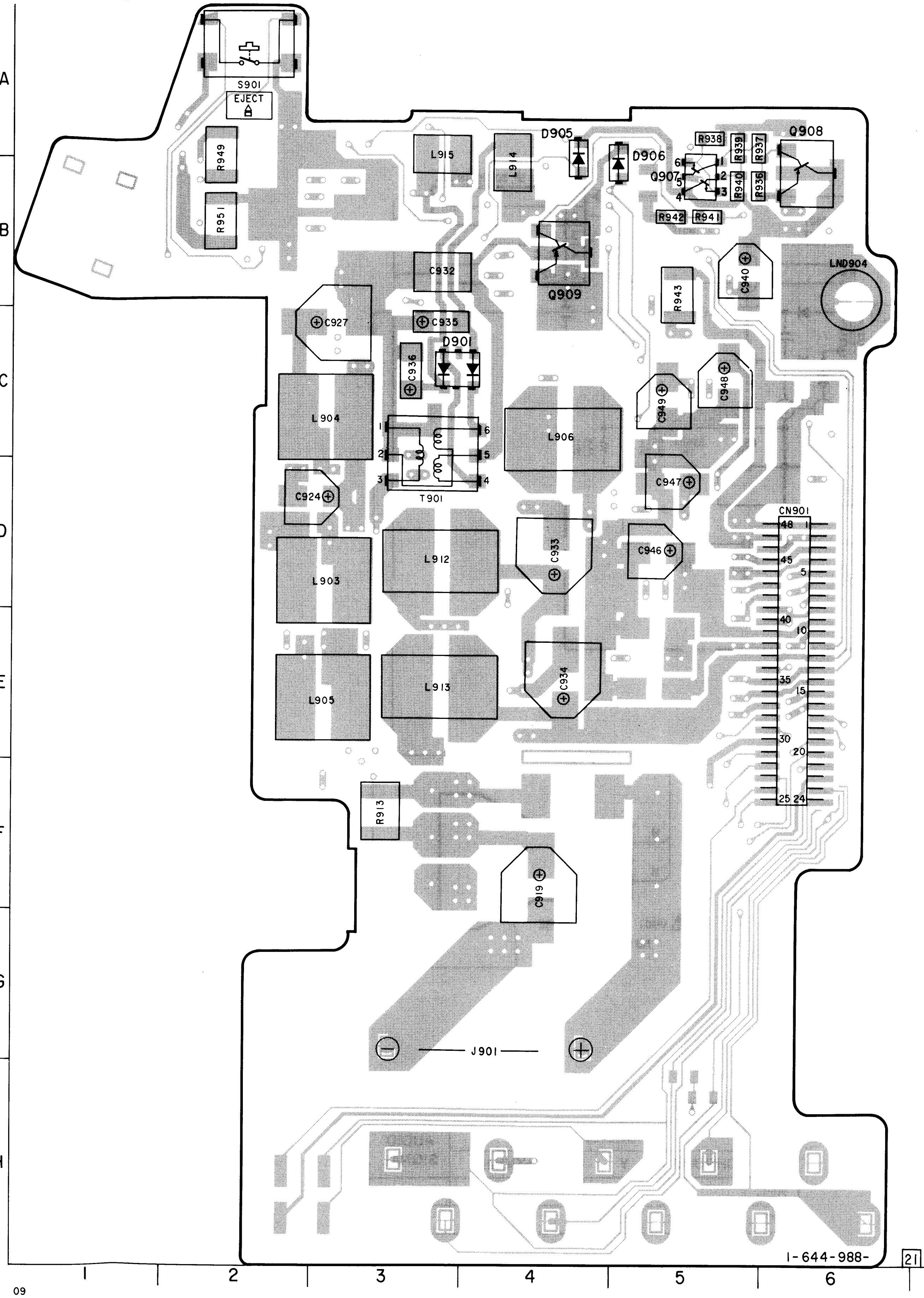

A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
S901
EJECT
R949
R951
L915
L914
D905
D906
R938
R939
R937
Q908
Q907
R940
R936
R942
R941
C932
Q909
R943
C940
LND904
C927
C935
D901
C936
C949
C948
L904
T901
L906
C924
C947
CN901
L903
L912
C933
C946
L905
L913
C934
R913
C919
J901
1-644-988-
21
09

DD-48 BOARD(CONDUCTOR SIDE)

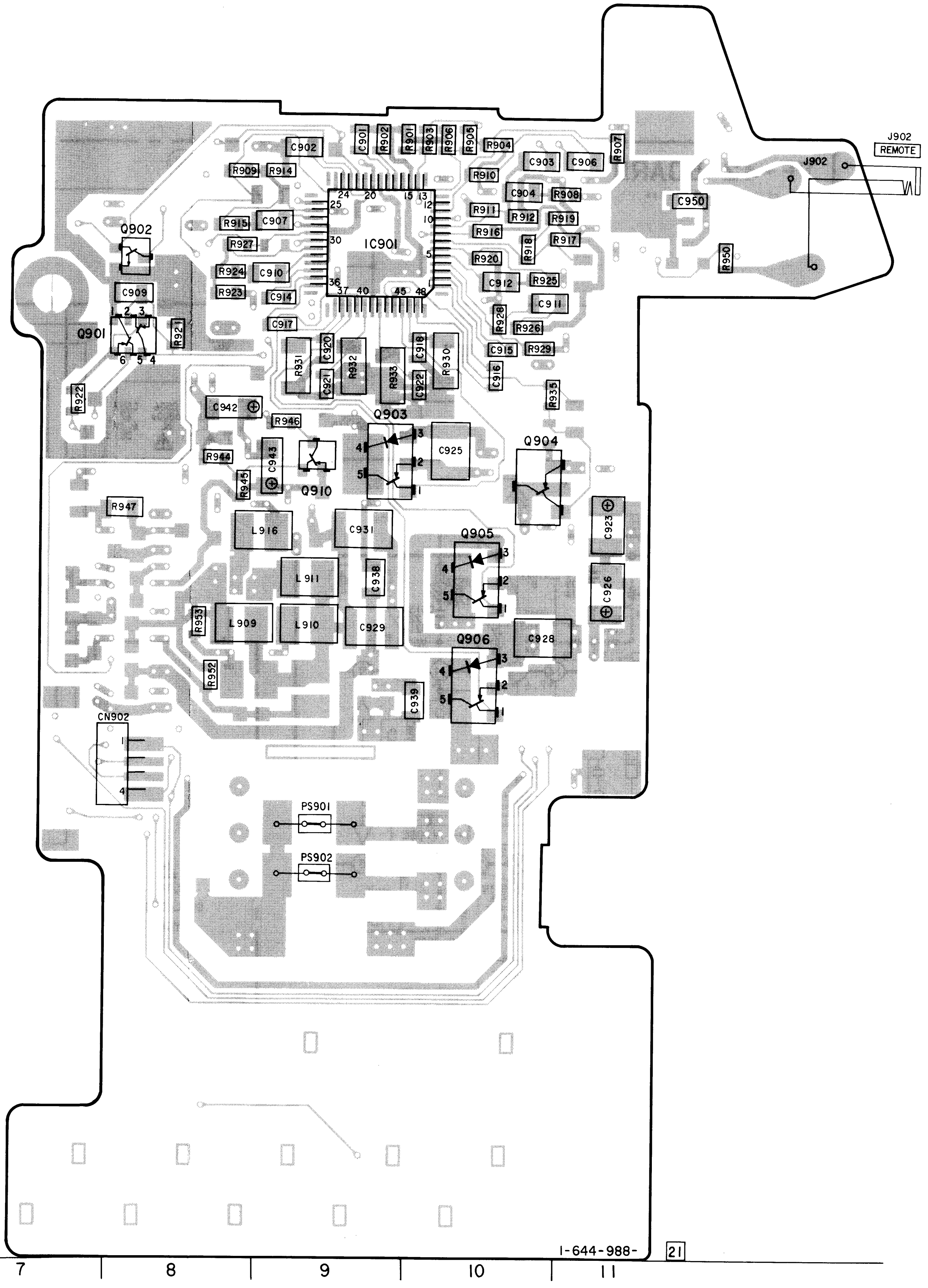

C902
R909
R914
R915
C907
IC
Q902
R927
R924
C910
C909
R923
C914
Q901
R921
C917
R931
C920
R922
C942
R946
R944
C943
R945
Q910
R947
L916
C931
L911
R953
L909
L910
R952
CN902
PS901
PS902
8
9

RINTED WIRING BOARDS

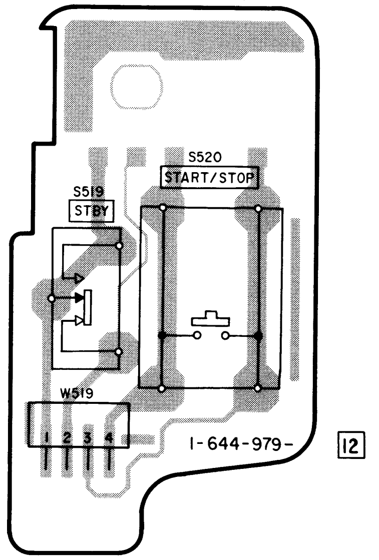
DD-48 BOARD(COMPONENT SIDE)


S901
EJECT
R949
R951
L915
L914
D905
D906
Q907
R938
R939
R937
R940
R936
Q908
R942
R941
Q909
C932
C935
C927
C936
D901
R943
C940
LND904
L904
T901
L906
C949
C948
C924
C947
L912
C933
C946
CN901
L903
L905
L913
C934
R913
C919
J901
1-644-988-
21
A
B
C
D
E
F
G
H
1
2
3
4
5
6

DD-48 BOARD(CONDUCTOR SIDE)

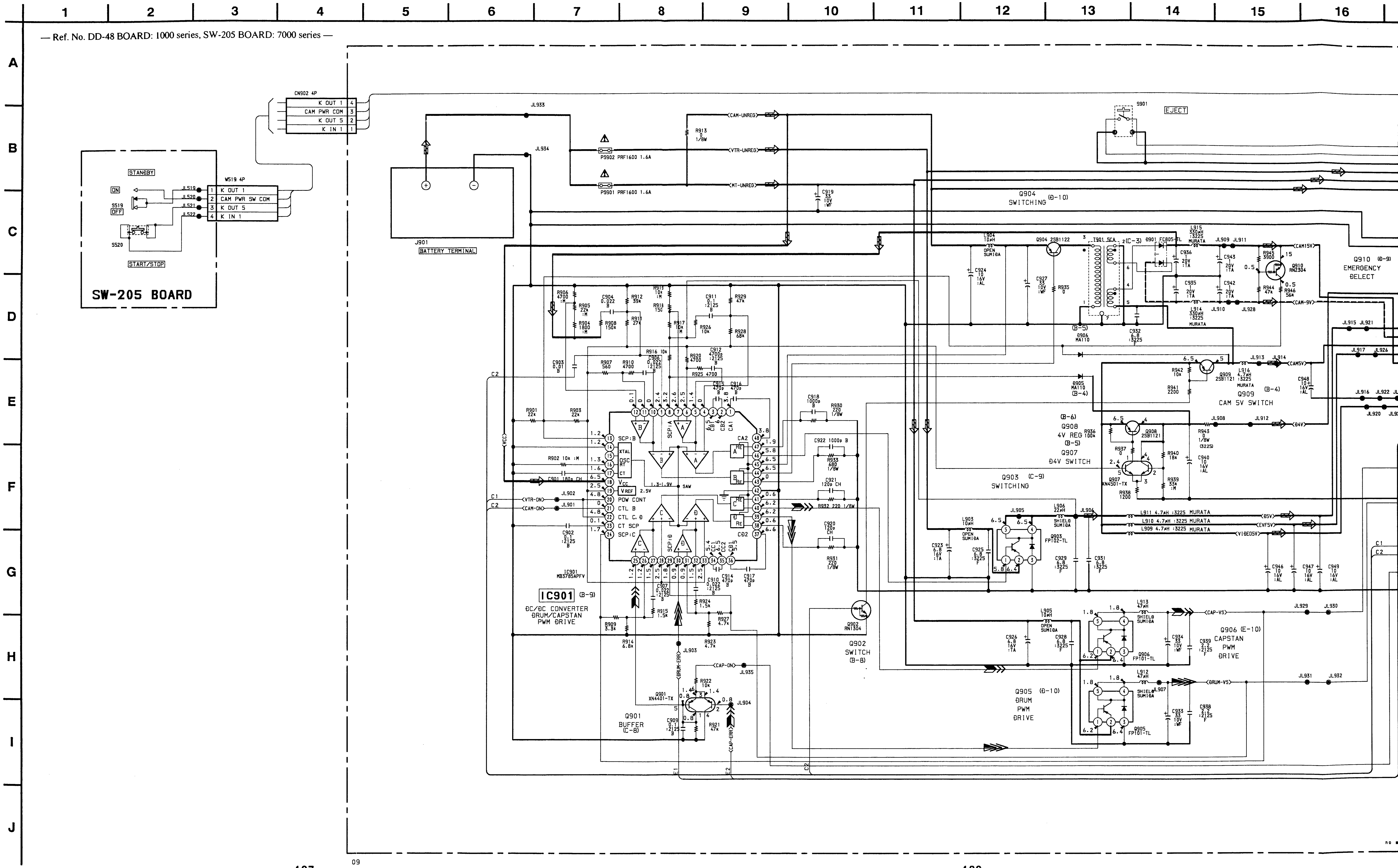

J902
REMOTE
C902
C901
R902
R901
R903
R906
R905
R904
C903
C906
R907
R909
R914
IC901
R910
C904
R908
C950
R915
C907
R911
R912
R919
R927
R916
R918
R917
R950
Q902
R924
C910
R920
R923
C914
C912
R925
C909
C911
Q901
R921
C917
R928
R926
R931
C920
R932
C918
R930
C915
R929
R922
C921
R933
C922
C916
R935
C942
R946
Q903
R944
C943
R945
Q910
C925
Q904
R947
L916
C931
C923
Q905
L911
C938
C926
R953
L909
L910
C929
C928
Q906
R952
C939
CN902
PS901
PS902
1-644-988-
21
7
8
9
10
11

SW-205 BOARD
(CONDUCTOR SIDE)


S520
START/STOP
S519
STBY
W519
1-644-979-
12

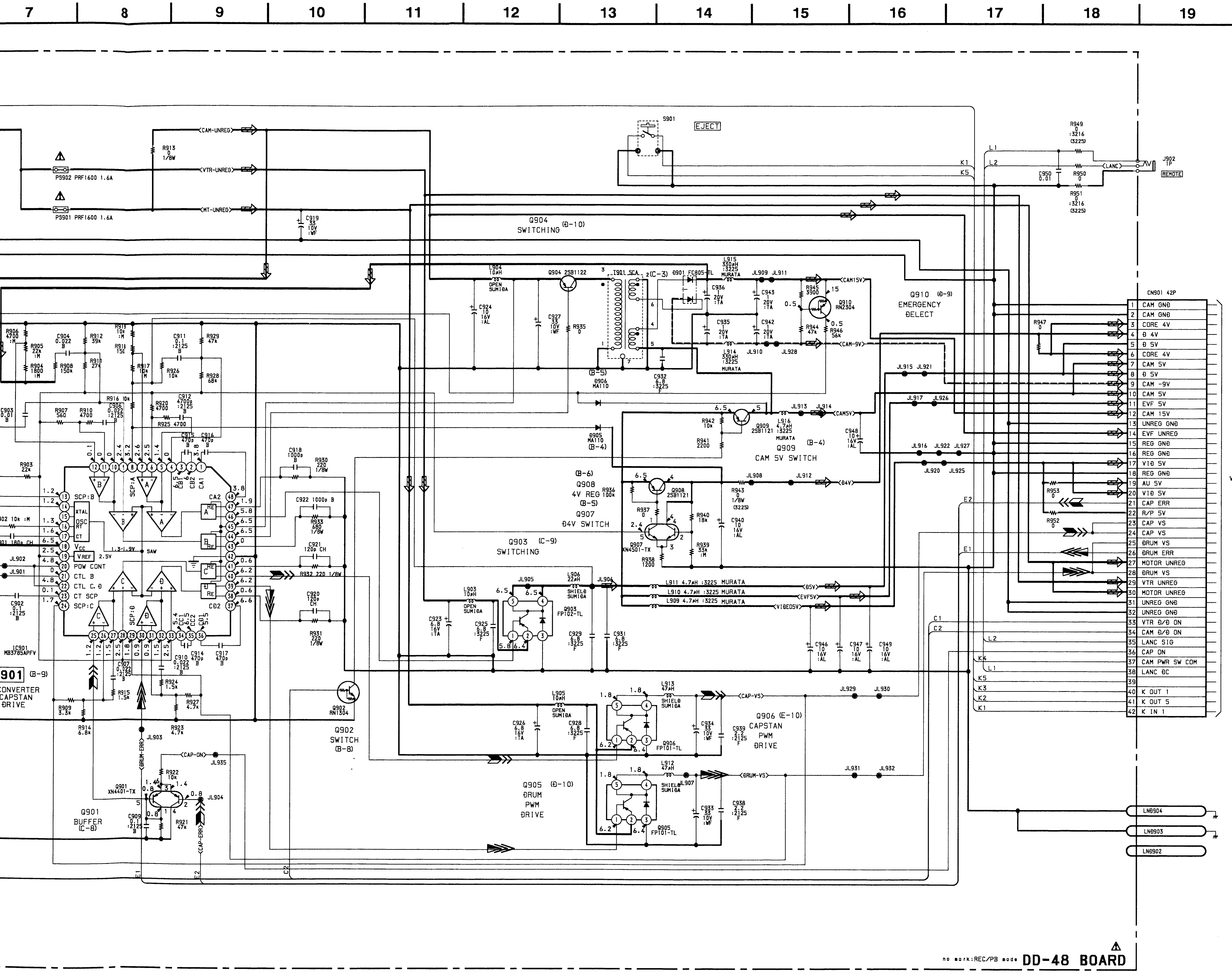
DD-48 (POWOR), SW-205 (CAMERA FUNCTION SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. DD-48 BOARD: 1000 series, SW-205 BOARD: 7000 series —



SW-205 BOARD
STANDBY
ON
S519
OFF
S520
START/STOP
W519 4P
K OUT 1
CAM PWR SW COM
K OUT 5
K IN 1
CN902 4P
CAM PWR COM
J901
BATTERY TERMINAL
JL933
JL934
PS902 PRF1600 1.6A
PS901 PRF1600 1.6A
CAM-UNREG
VTR-UNREG
MT-UNREG
R913
C919
Q904 (D-10)
SWITCHING
S901
EJECT
T901 SCA
D901 FC805-TL
Q910 (D-9)
EMERGENCY
EJECT
Q909 (B-4)
CAM 5V SWITCH
Q908
4V REG
Q907
D4V SWITCH
Q903 (C-9)
SWITCHING
IC901 (B-9)
DC/DC CONVERTER
DRUM/CAPSTAN
PWM DRIVE
IC901
MB3785APFV
SCP:B
XTAL
OSC
CT
Vcc
VREF
POW CONT
CTL B
CTL C.D
CT SCP
SCP:C
VTR-ON
CAM-ON
Q902
SWITCH
(B-8)
Q901
BUFFER
(C-8)
CAP-ON
DRUM-ERR
CAP-ERR
Q906 (E-10)
CAPSTAN
PWM
DRIVE
Q905 (D-10)
DRUM
PWM
DRIVE
CAP-VS
DRUM-VS
CAM15V
CAM-9V
CAM5V
B4V
B5V
EVF5V
VIDEO5V
L911 4.7μH :3225 MURATA
L910 4.7μH :3225 MURATA
L909 4.7μH :3225 MURATA

09


7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
S901
EJECT
J902
IP
REMOTE
LANC
R949 0 :3216 (3225)
R950 0
R951 0 :3216 (3225)
C950 0.01
L1
L2
K1
K5
PS902 PRF1600 1.6A
PS901 PRF1600 1.6A
CAM-UNREG
VTR-UNREG
MT-UNREG
R913 0 1/8W
C919 33 10V :WF
Q904 (D-10)
SWITCHING
L904 10μH OPEN SUMIDA
Q904 2SB1122
T901 SCA
(C-3)
D901 FC805-TL
L915 330μH :3225 MURATA
JL909
JL911
CAM15V
R945 3900
Q910 RN2304
Q910 (D-9)
EMERGENCY
EJECT
R946 56k
R944 47k
CAM-9V
C924 10 16V :AL
C927 33 10V :WF
R935 0
C936 1 20V :TA
C943 1 20V :TA
C935 1 20V :TA
C942 1 20V :TA
L914 330μH :3225 MURATA
JL910
JL928
D906 MA110
(B-5)
C932 6.8 :3225
JL915
JL921
JL917
JL926
JL913
JL914
CAM5V
R942 10k
Q909 2SB1121 :3225
L916 4.7μH :3225 MURATA
Q909
CAM 5V SWITCH
(B-4)
R941 2200
C948 10 16V :AL
D905 MA110 (B-4)
JL916
JL922
JL927
JL920
JL925
(B-6)
Q908
4V REG
(B-5)
Q907
D4V SWITCH
R936 100k
Q908 2SB1121
JL908
JL912
D4V
R943 0 1/8W (3225)
R937 0
R940 18k
C940 10 16V :AL
Q907 XN4501-TX
R938 1200
R939 33k :M
Q903 (C-9)
SWITCHING
R947 0
R953 0
R952 0
E2
E1
CN901 42P
1 CAM GND
2 CAM GND
3 CORE 4V
4 D 4V
5 D 5V
6 CORE 4V
7 CAM 5V
8 D 5V
9 CAM -9V
10 CAM 5V
11 EVF 5V
12 CAM 15V
13 UNREG GND
14 EVF UNREG
15 REG GND
16 REG GND
17 V10 5V
18 REG GND
19 AU 5V
20 V10 5V
21 CAP ERR
22 R/P 5V
23 CAP VS
24 CAP VS
25 DRUM VS
26 DRUM ERR
27 MOTOR UNREG
28 DRUM VS
29 VTR UNREG
30 MOTOR UNREG
31 UNREG GND
32 UNREG GND
33 VTR D/D ON
34 CAM D/D ON
35 LANC SIG
36 CAP ON
37 CAM PWR SW COM
38 LANC DC
39
40 K OUT 1
41 K OUT 5
42 K IN 1
L903 10μH OPEN SUMIDA
JL905
L906 22μH SHIELD SUMIDA
JL906
L911 4.7μH :3225 MURATA
L910 4.7μH :3225 MURATA
L909 4.7μH :3225 MURATA
D5V
EVF5V
VIDEO5V
Q903 FP102-TL
C923 6.8 16V :TA
C925 6.8 :3225 F
C929 6.8 :3225 F
C931 6.8 :3225 F
C946 10 16V :AL
C947 10 16V :AL
C949 10 16V :AL
C1
C2
K4
K3
K2
L905 10μH OPEN SUMIDA
L913 47μH SHIELD SUMIDA
CAP-VS
JL929
JL930
C926 6.8 16V :TA
C928 6.8 :3225 F
C934 33 10V :WF
C939 2.2 :2125 F
Q906 (E-10)
CAPSTAN
PWM
DRIVE
Q906 FP101-TL
L912 47μH SHIELD SUMIDA
JL907
DRUM-VS
JL931
JL932
Q905 (D-10)
DRUM
PWM
DRIVE
C933 33 10V :WF
C938 2.2 :2125 F
Q905 FP101-TL
LN0904
LN0903
LN0902
Q902 RN1304
Q902
SWITCH
(B-8)
CAP-ON
JL935
JL903
JL904
DRUM-ERR
CAP-ERR
Q901 XN4401-TX
Q901
BUFFER
(C-8)
R922 10k
R921 47k
C909 0.1 :2125 B
R923 4.7k
R924 1.5k
R927 4.7k
R914 6.8k
R909 3.3k
R915 1.5k
IC901 MB3785APFV
IC901 (B-9)
DC CONVERTER
CAPSTAN
DRIVE
SCP:B
XTAL
OSC RT
CT
VCC
VREF
2.5V
POW CONT
CTL B
CTL C, D
CT SCP
SCP:C
SCP:A
SCP:D
CA1
CA2
CB1
CB2
CC1
CC2
CD1
CD2
SAW
1.3-1.9V
R906 4700 :M
R905 22k :M
R904 1800 :M
C904 0.022 B
R908 150k
R912 39k
R911 27k
R919 10k :M
R918 15k
R917 10k :M
R926 10k
C911 0.1 :2125 B
R929 47k
R928 68k
R916 10k
R907 560
R910 4700
C906 0.022 :2125
R920 4700
C912 4700p :2125 B
R925 4700
C915 470p B
C916 470p B
C903 0.01 B
R903 22k
R902 10k :M
JL902
JL901
C902 0.1 :2125 B
C918 1000p B
R930 220 1/8W
C922 1000p B
R933 680 1/8W
C921 120p CH
R932 220 1/8W
C920 120p CH
R931 220 1/8W
C907 0.022 :2125 B
C910 0.022 :2125 B
C914 470p B
C917 470p B
no mark:REC/PB mode
DD-48 BOARD

TO
VS-95 BOARD
CN404

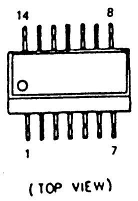
(See Page 107)

- **SIGNAL PATH**

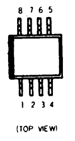
	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)		⋙	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)		⇒»	
Ref. signal			

4-3. SEMICONDUCTORS

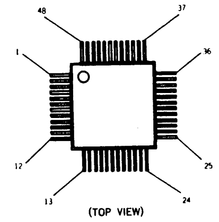
AN2512S


14
8
1
7
(TOP VIEW)

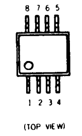
BR9021AF
LM358DR


8 7 6 5
1 2 3 4
(TOP VIEW)

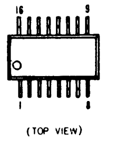
CXA1202R
CXA1208R
CXA1481AR
CXA1488R


48
37
1
36
12
25
13
24
(TOP VIEW)

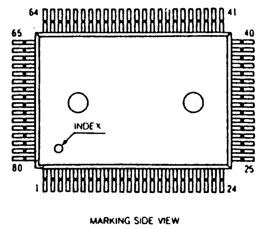
CXA1211M
NJM2234M
NJM3414M


8 7 6 5
1 2 3 4
(TOP VIEW)

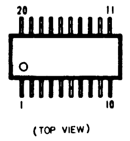
CXA1452N
CXL1506M


16
9
1
8
(TOP VIEW)

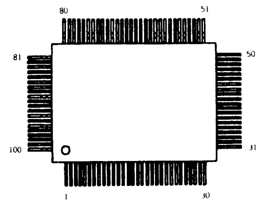
CXD2100Q
μPD75316GF


64
41
65
40
80
25
1
24
INDEX
MARKING SIDE VIEW

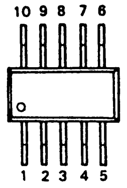
CXD1250AN
CXD2104BN
M62353GP
MB88346BPFV
MPC1720VM
MPC1724VMEL
μPD7564G-540


20
11
1
10
(TOP VIEW)

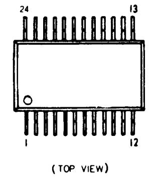
CXP80624-428R/434R


80
51
81
50
100
31
1
30

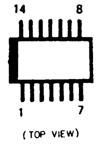
LB1830M


10 9 8 7 6
1 2 3 4 5

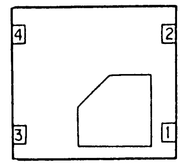
LB8111V


24
13
1
12
(TOP VIEW)

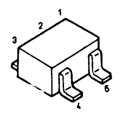
LM324DR


14
8
1
7
(TOP VIEW)

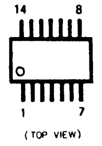
RS-20E-T



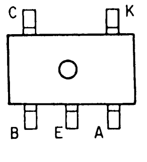
TC7SU04F



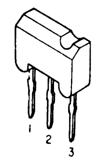
TL1596CDB


14
8
1
7
(TOP VIEW)

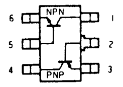
FP101
FP102



XN4213
UMZ1



XN4312


6
5
4
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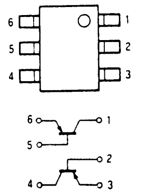
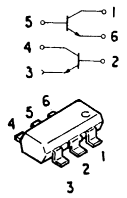
2
3
NPN
PNP

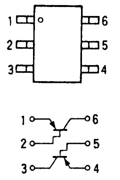
XN4401
UMT1



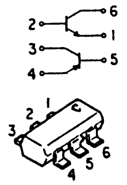
XN4501
UMX1



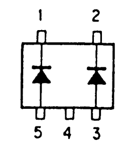
XP4401



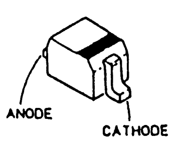
XP4601



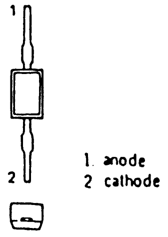
FC805



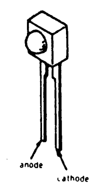
MA110


ANODE
CATHODE

TLS221


1
2
1. anode
2. cathode

BR4371F


anode
cathode

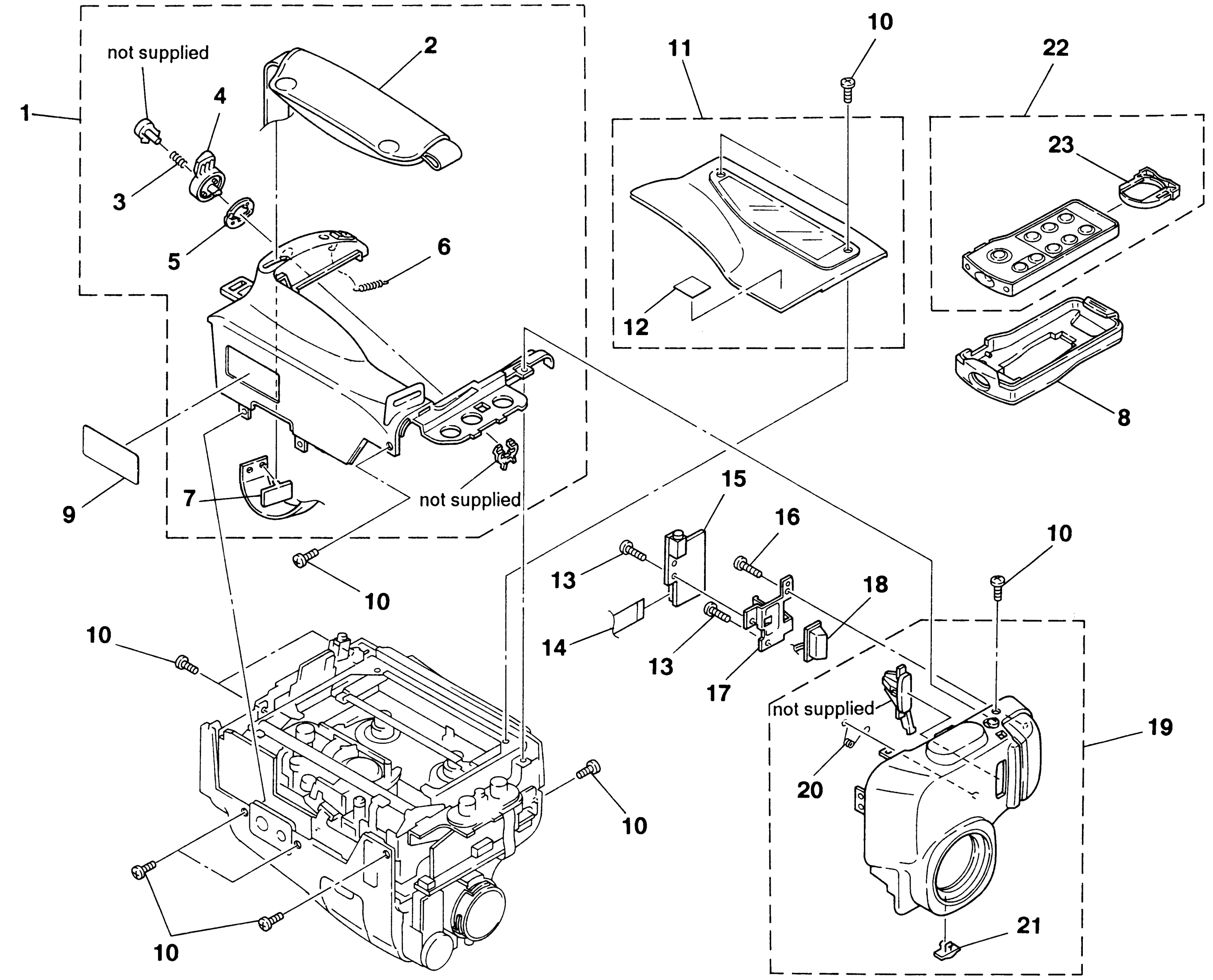
SECTION 5
EXPLODED VIEWS

NOTE:

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " ✱ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. CABINET (L) AND F PANEL ASSEMBLIES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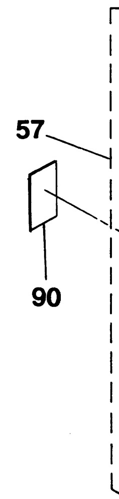
not supplied

Ref. No.	Part No.	Description	Remark
1	X-3942-282-1	CABINET (L) ASSY	
2	3-736-807-01	BELT, GRIP	
3	3-578-221-00	SPRING, COMPRESSION	
4	3-942-985-01	KNOB, STAND-BY	
5	3-736-364-01	SPRING	
6	4-602-490-00	SPRING, TENSION	
7	3-942-895-01	STOPPER, BELT	
8	3-943-154-11	HOLDER (B), REMOTE CONTROL	
* 9	3-949-861-01	LABEL, MODEL NUMBER (AEP)	
* 9	3-950-354-01	LABEL, MODEL NUMBER (UK, E, Australian)	
10	3-719-381-01	SCREW (M2X4)	
11	X-3942-139-1	LID ASSY, CASSETTE	

Ref. No.	Part No.	Description	Remark
* 12	3-703-713-41	STICKER, SONY SYMBOL (10)	
13	3-713-790-21	SCREW (M2X6), TAPPING, P3	
14	1-696-487-11	CABLE, FLAT (FFC-90)	
15	A-7063-322-A	MA-149P BOARD, COMPLETE	
16	3-719-601-01	SCREW (B2X5), TAPPING	
* 17	3-949-000-01	RETAINER, MICROPHONE	
18	A-7091-800-A	MICROPHONE UNIT	
19	X-3941-891-2	PANEL ASSY, F	
20	3-947-357-01	SPRING, TORSION	
21	3-945-269-01	KNOB, S	
22	1-465-927-81	REMOTE COMMANDER (CAM CORDER) (RMT-507)	
23	3-708-412-01	LID, REMOTE COMMANDER	

5-2. CAB



Ref. No.	Part
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52	A-70
53	A-70
54	A-70
55	3-71
56	3-74
57	X-39
58	3-94
59	3-94
60	3-42
61	3-94
62	3-30
63	3-94
64	3-94
65	3-94
66	3-94
67	3-74
68	3-74
69	3-74
70	3-71
71	3-94
* 72	3-94
73	3-74
74	3-74

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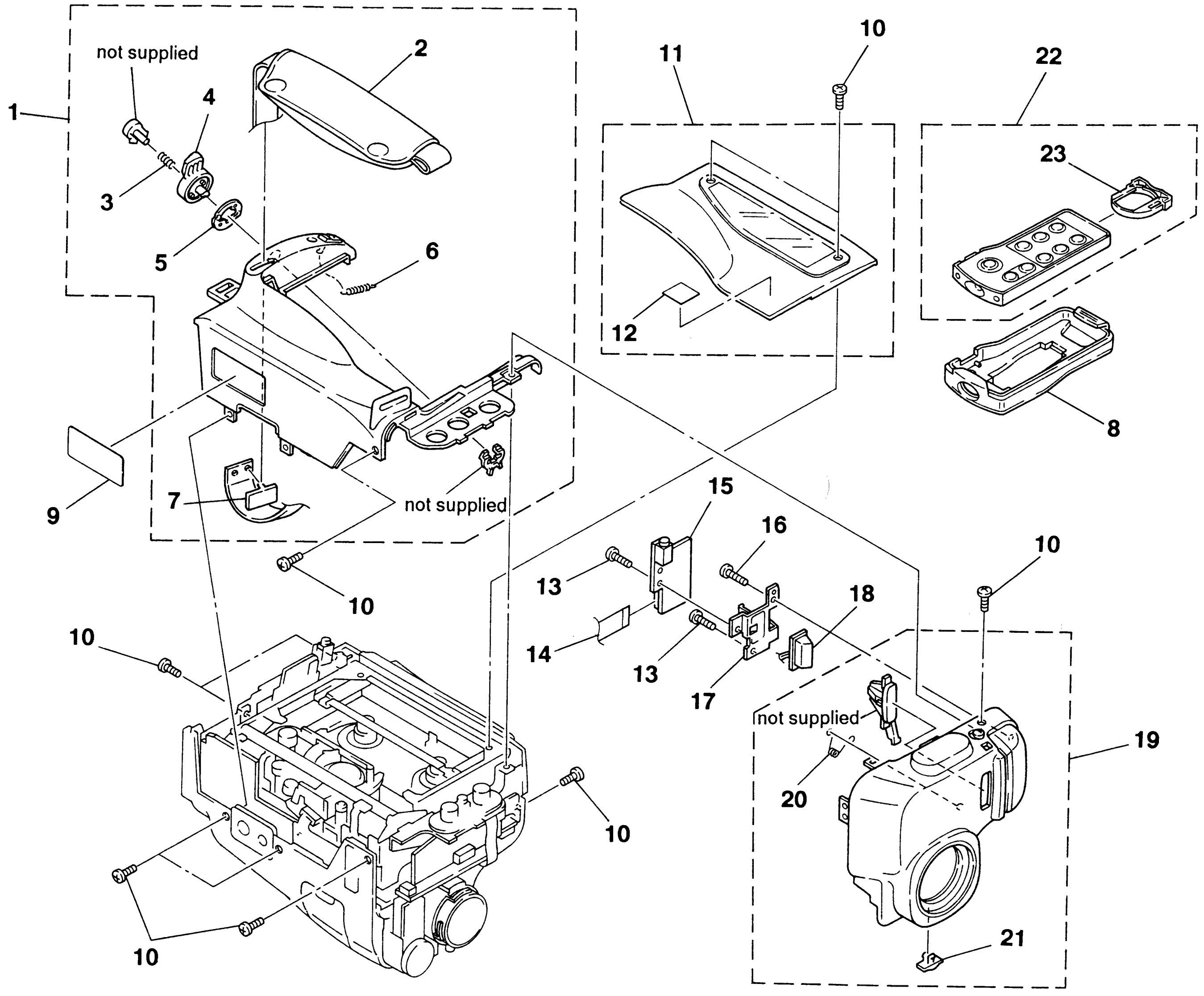
athode

SECTION 5
EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " ∗ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

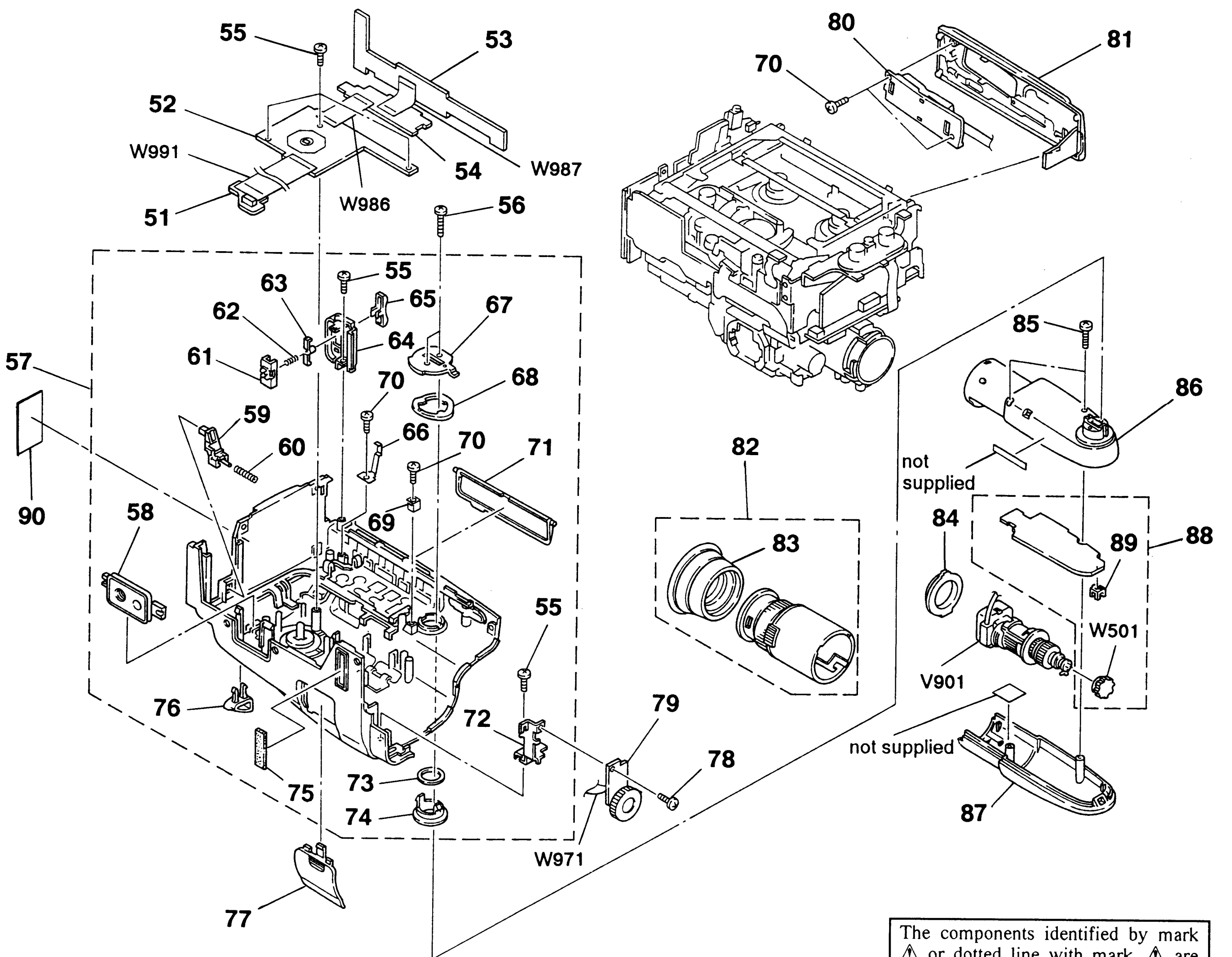
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. CABINET (L) AND F PANEL ASSEMBLIES



Ref. No.	Part No.	Description	Remark
1	X-3942-282-1	CABINET (L) ASSY	
2	3-736-807-01	BELT, GRIP	
3	3-578-221-00	SPRING, COMPRESSION	
4	3-942-985-01	KNOB, STAND-BY	
5	3-736-364-01	SPRING	
6	4-602-490-00	SPRING, TENSION	
7	3-942-895-01	STOPPER, BELT	
8	3-943-154-11	HOLDER (B), REMOTE CONTROL	
* 9	3-949-861-01	LABEL, MODEL NUMBER (AEP)	
* 9	3-950-354-01	LABEL, MODEL NUMBER (UK, E, Australian)	
10	3-719-381-01	SCREW (M2X4)	
11	X-3942-139-1	LID ASSY, CASSETTE	
* 12	3-703-713-41	STICKER, SONY SYMBOL (10)	
13	3-713-790-21	SCREW (M2X6), TAPPING, P3	
14	1-696-487-11	CABLE, FLAT (FFC-90)	
15	A-7063-322-A	MA-149P BOARD, COMPLETE	
16	3-719-601-01	SCREW (B2X5), TAPPING	
* 17	3-949-000-01	RETAINER, MICROPHONE	
18	A-7091-800-A	MICROPHONE UNIT	
19	X-3941-891-2	PANEL ASSY, F	
20	3-947-357-01	SPRING, TORSION	
21	3-945-269-01	KNOB, S	
22	1-465-927-81	REMOTE COMMANDER (CAM CORDER) (RMT-507)	
23	3-708-412-01	LID, REMOTE COMMANDER	

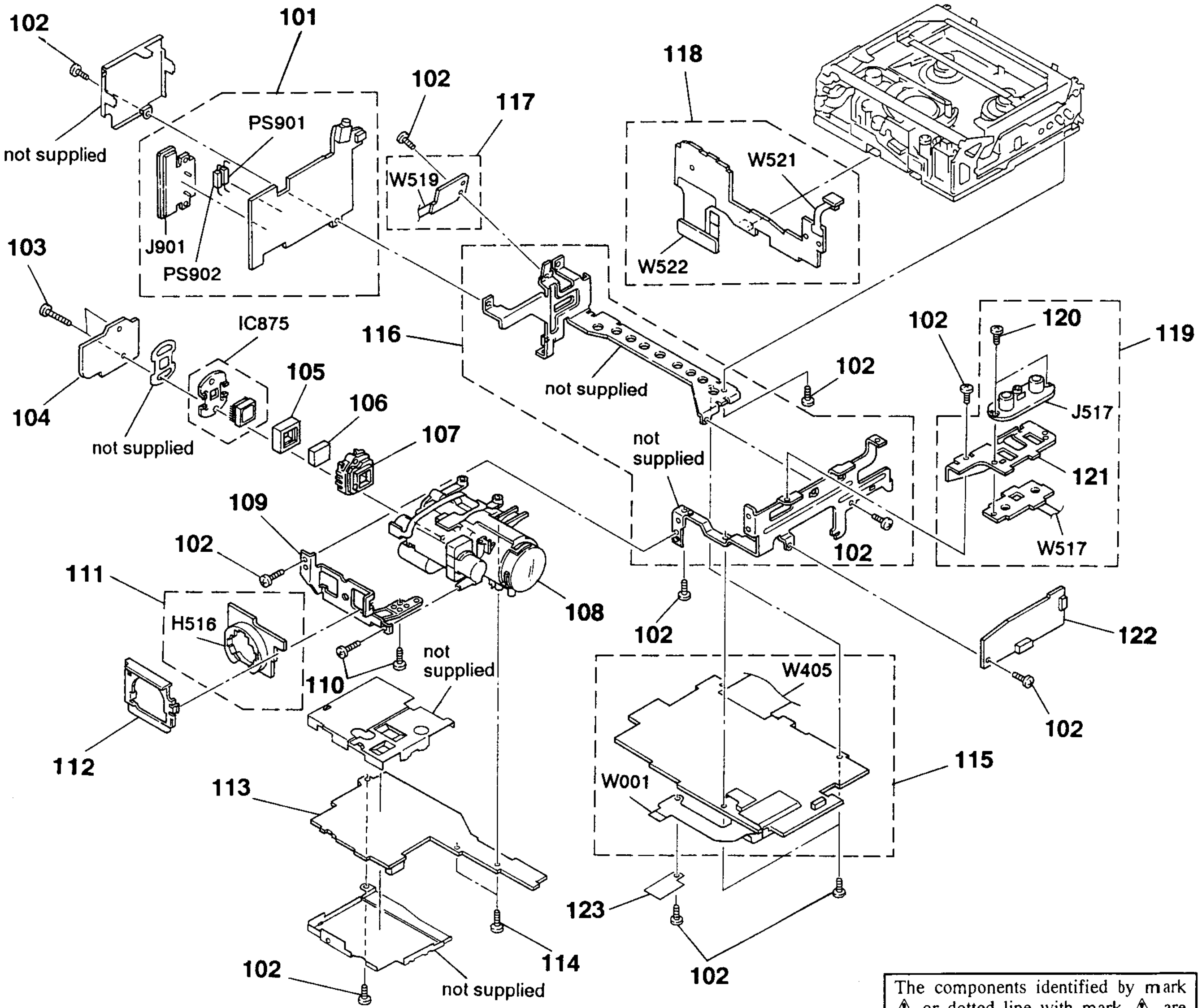
5-2. CABINET (R) AND EVF ASSEMBLIES



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
51	A-7071-694-A	CN-65P BOARD, COMPLETE	
52	A-7071-655-A	CF-32 BOARD, COMPLETE	
53	A-7071-653-A	VK-27 BOARD, COMPLETE	
54	A-7071-654-A	ED-35 BOARD, COMPLETE	
55	3-713-790-21	SCREW (M2X6), TAPPING, P3	
56	3-740-546-41	SCREW (M2X10)	
57	X-3942-156-3	CABINET (R) ASSY	
58	3-942-911-01	SCREW, TRIPOD	
59	3-948-990-01	LOCK, BATTERY	
60	3-426-508-00	SPRING, COMPRESSION	
61	3-948-839-01	BLIND, POWER	
62	3-303-973-00	SPRING, COMPRESSION	
63	3-946-186-01	PUSH BUTTON, POWER	
64	3-948-975-01	POWER (BASE)	
65	3-946-248-01	BUTTON, POWER	
66	3-948-988-01	SPRING, LEAF, VK	
67	3-747-111-01	PLATE, LOCK, TILT	
68	3-747-110-01	SPRING, LEAF, TILT	
69	3-747-178-01	REINFORCEMENT, TILT LOCK	
70	3-719-601-01	SCREW (B2X5), TAPPING	
71	3-948-976-01	DOOR, CONTROL	
* 72	3-948-987-01	FRAME, MF	
73	3-747-112-01	RING, TILT	
74	3-747-109-01	SLEEVE, EVF	
75	3-949-008-01	SHEET, FOOT	
76	3-948-989-01	KNOB, BATTERY	
77	3-948-843-01	LID, BATTERY CASE, LITHIUM	
78	3-713-786-51	SCREW (M2X3)	
79	A-7071-656-A	MF-191 BOARD, COMPLETE	
80	1-692-257-11	SWITCH, PUSH (ZOOM)	
81	X-3941-894-1	LID ASSY, LS	
82	X-3941-603-1	HOLDER ASSY, FINDER	
83	3-946-426-01	EYE CUP	
84	3-747-116-01	COVER, CRT	
85	3-713-790-31	SCREW (M2X8), TAPPING, P3	
86	X-3940-706-1	CABINET (L) ASSY, EVF	
87	3-943-077-01	CABINET (R), EVF	
88	A-7063-220-A	VF-42P BOARD, COMPLETE	
89	3-942-888-01	HOLDER, LED	
* 90	3-704-235-01	LABEL, CAUTION (UK)	
V901	1-452-565-11	CRT ASSY	
⚠W501	1-540-019-21	SOCKET ASSY, CRT	
W971	1-696-484-11	CABLE, FLAT (FFC-87)	
W986	1-696-621-11	FP-590 FLEXIBLE BOARD	
W987	1-696-622-11	FP-591 FLEXIBLE BOARD	
W991	1-696-483-11	CABLE, FLAT (FFC-86)	

5-3. MAIN BOARDS ASSEMBLY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PS901
not supplied
W519
W521
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J901
PS902
W522
IC875
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not supplied
J517
not supplied
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not
supplied
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W517
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H516
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supplied
W405
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W001
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not supplied
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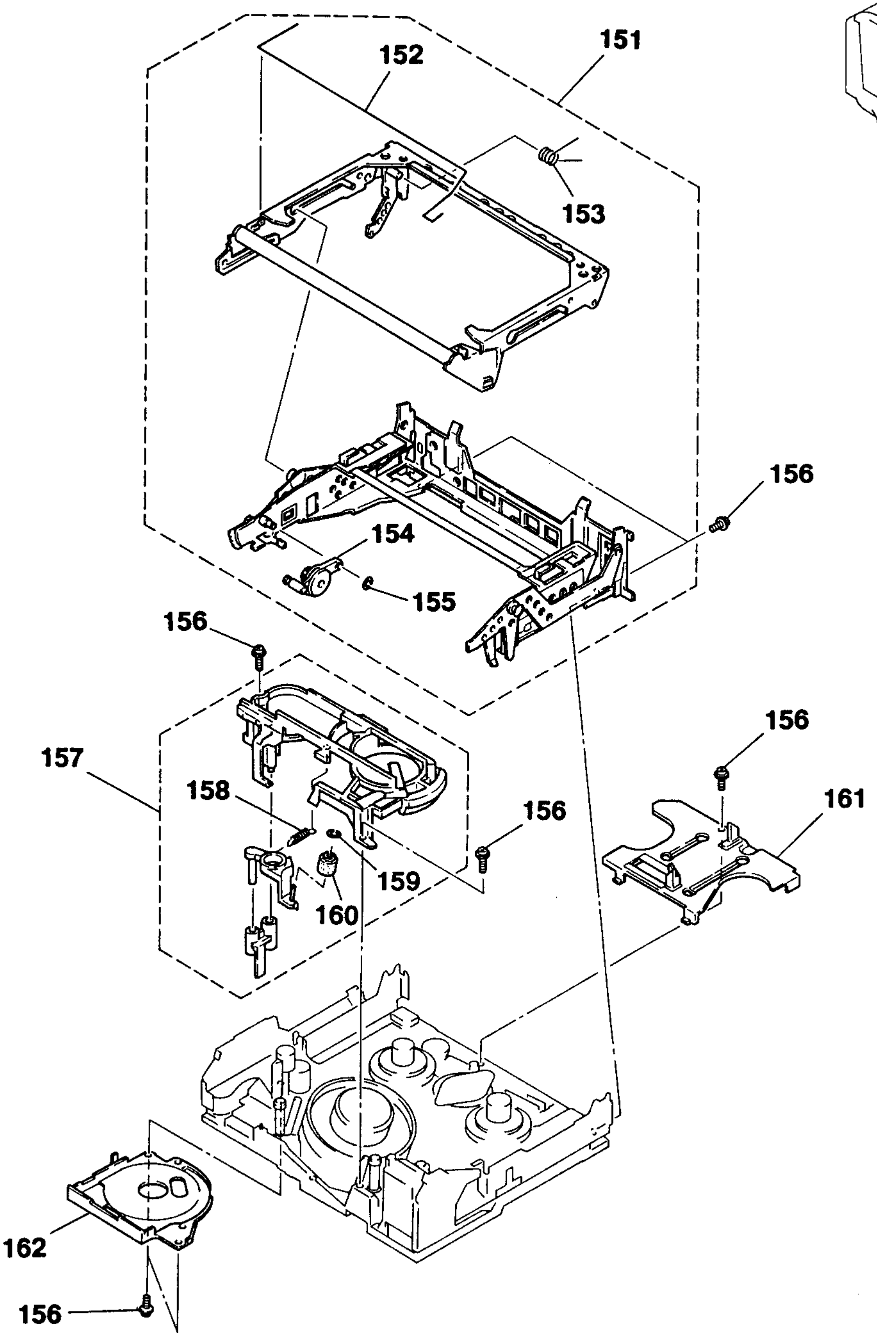
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
⚠101	A-7063-320-A	DD-48P BOARD, COMPLETE	
102	3-713-786-51	SCREW (M2X3)	
103	3-947-268-01	SCREW (B TIGHT) (2), TAPPING	
104	A-7063-318-A	CD-92P BOARD, COMPLETE	
105	3-946-857-01	RUBBER (S), SEAL	
106	1-547-558-21	FILTER BLOCK, OPTICAL	
107	3-946-856-01	ADAPTOR (H), CCD FITTING	
108	1-547-548-11	LENS, ZOOM (VCL-6210WC)	
* 109	3-949-001-01	FRAME, LENS	
110	3-713-790-21	SCREW (M2X6), TAPPING, P3	
111	A-7071-652-A	LI-44 BOARD, COMPLETE	
112	3-948-842-01	HOLDER, LI	
113	A-7063-317-A	VC-122P BOARD, COMPLETE	
114	3-719-601-01	SCREW (B2X5), TAPPING	
115	A-7063-316-A	VS-95P BOARD, COMPLETE	
* 116	X-3942-209-1	FRAME (UPPER LOWER) ASSY	
117	A-7071-651-A	SW-205 BOARD, COMPLETE	
118	A-7063-319-A	SL-27P BOARD, COMPLETE	
119	A-7063-266-A	JK-91 BOARD, COMPLETE	
120	3-719-381-01	SCREW (M2X4)	
* 121	3-948-974-01	FRAME (M), JACK	
122	A-7063-321-A	AU-138P BOARD, COMPLETE	
123	3-951-136-02	SHIELD, DRUM	
H516	1-550-104-32	HOLDER, BATTERY	
J517	1-537-142-21	TERMINAL BOARD	
J901	1-537-281-41	TERMINAL BOARD	
IC875	A-7030-369-A	CCD BLOCK ASSY (AUTO) (ICX055AK-2) (CCD IMAGER)	
⚠PS901	1-532-841-21	LINK, IC 1.6A/90V	
⚠PS902	1-532-841-21	LINK, IC 1.6A/90V	
W001	1-696-489-11	FP-588 FLEXIBLE BOARD	
W405	1-644-285-11	FP-572 FLEXIBLE BOARD	
W517	1-696-482-11	CABLE, FLAT (FFC-85)	
W519	1-696-488-11	CABLE, FLAT (FFC-92)	
W521	1-642-186-11	FP-437 FLEXIBLE BOARD	
W522	1-696-490-11	FP-589 FLEXIBLE BOARD	

5-4. CASSETTE COMPARTMENT ASSEMBLY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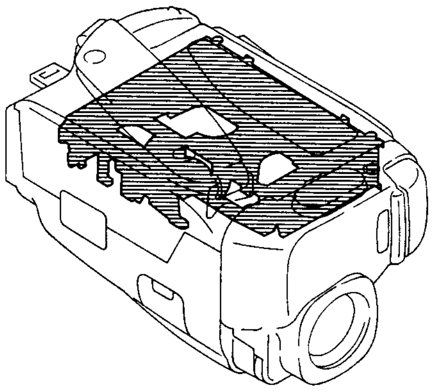
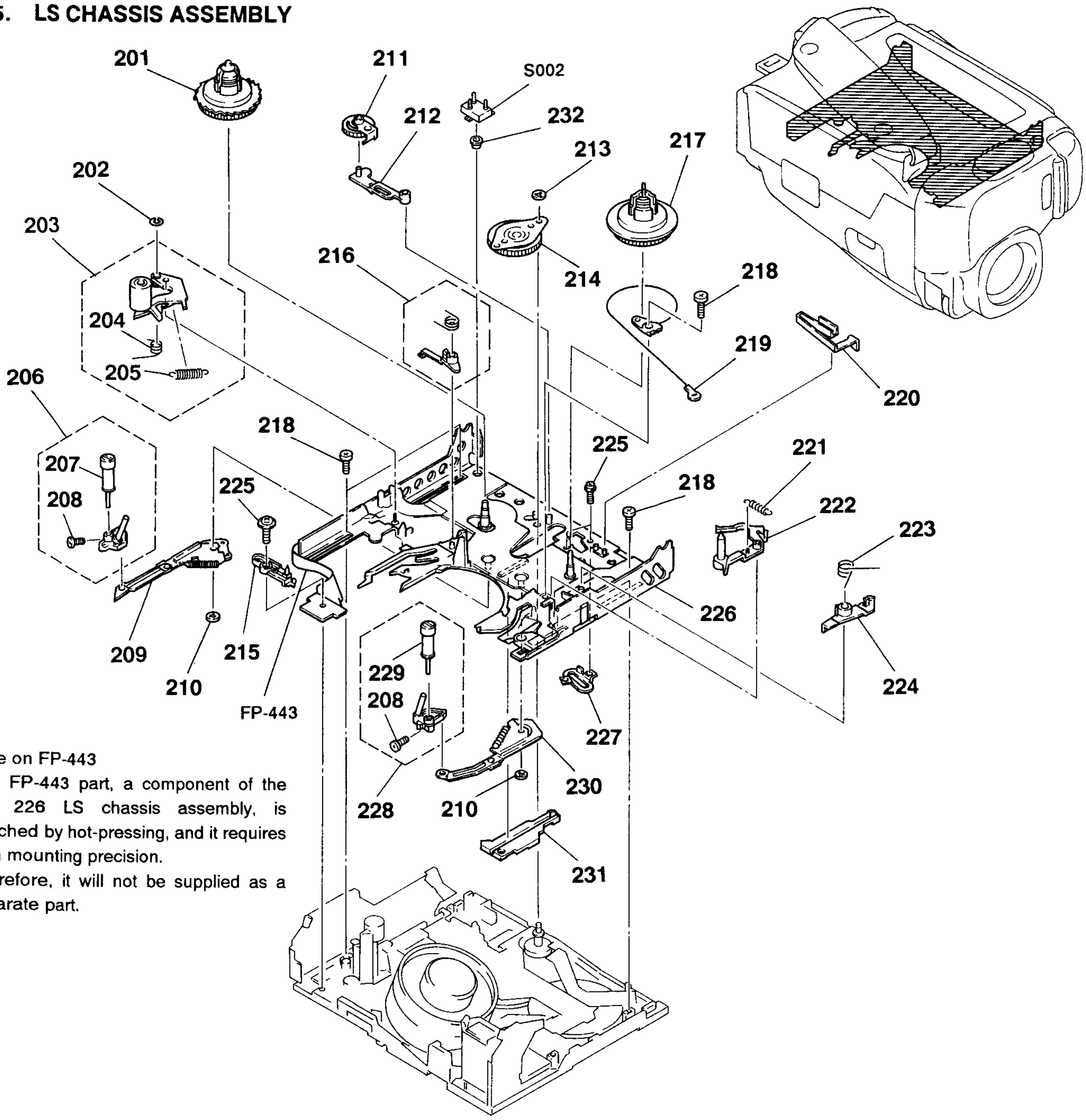


Ref. No.	Part No.	Description	Remark
151	A-7040-312-A	CASSETTE COMPARTMENT BLOCK ASSY	
152	3-945-773-01	BAR, TORSION	
153	3-945-771-01	SPRING, TORSION	
154	X-3941-287-2	DAMPER ASSY	
155	3-315-384-31	WASHER, STOPPER	
156	3-947-503-01	SCREW (M1. 4X2. 5)	
157	A-7040-309-A	PROTECT (BASE) BLOCK ASSY	
158	3-945-760-01	SPRING, TENSION	
159	3-321-393-01	WASHER, STOPPER	
160	X-3726-817-3	ROLLER ASSY, HC	
161	X-3941-280-1	RETAINER ASSY, GOOSENECK	
162	3-945-733-01	COVER, CAPSTAN	

5-5. LS CHASSIS ASSEMBLY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FP-443
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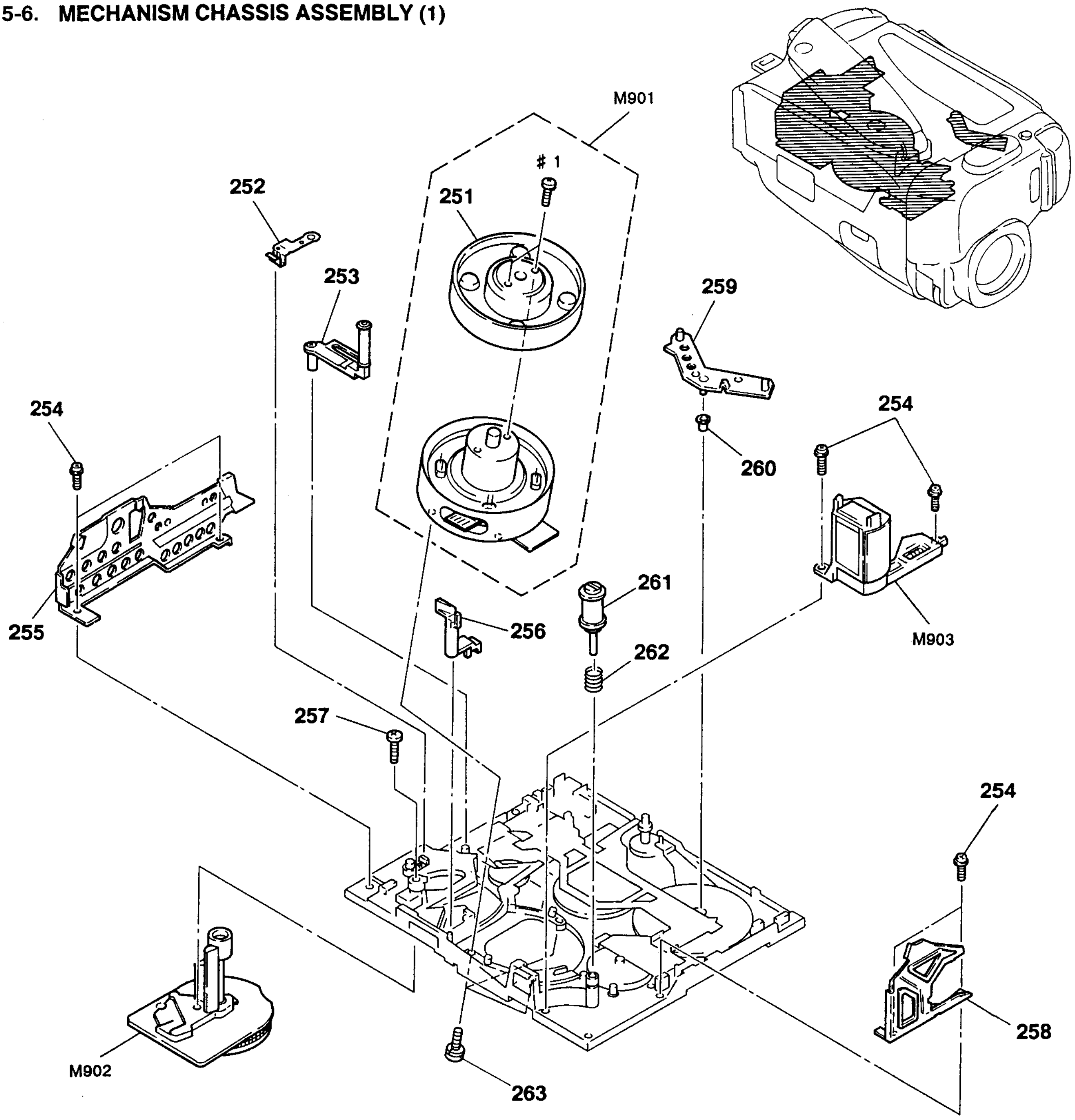
Note on FP-443
The FP-443 part, a component of the No. 226 LS chassis assembly, is attached by hot-pressing, and it requires high mounting precision.
Therefore, it will not be supplied as a separate part.

Ref. No.	Part No.	Description	Remark
201	X-3941-274-1	TABLE ASSY, REEL, T	
202	3-331-007-21	WASHER	
203	X-3941-271-1	ARM ASSY, PINCH	
204	3-945-743-01	SPRING, TORSION	
205	3-945-783-01	SPRING, TENSION	
206	A-7040-307-A	GUIDE (BASE) (T) BLOCK ASSY	
207	X-3941-424-1	ROLLER ASSY, TG6	
208	3-947-504-01	SCREW (M1.2X2)	
209	X-3941-267-1	ARM (T) ASSY, GUIDE	
210	3-669-465-00	WASHER (1.5), STOPPER	
211	X-3941-273-1	SOFT ASSY, T	
212	3-945-753-01	ARM, T SOFT	
213	3-726-829-01	WASHER, STOPPER	
214	X-3941-279-1	GEAR ASSY, GOOSENECK	
215	3-947-644-01	RETAINER, TG5 (BASE)	
216	A-7040-321-A	CLAW BLOCK ASSY, T HARD	
217	X-3941-275-1	TABLE ASSY, REEL, S	
218	3-945-756-01	SCREW (M1.4X3)	
219	X-3941-277-1	STRING BLOCK ASSY	
220	3-945-801-01	BRAKE, S SOFT	
221	3-948-810-01	SPRING, TENSION	
222	X-3941-276-1	TG1 ASSY	
223	3-945-752-01	SPRING, TORSION	
224	3-945-799-01	BRAKE, S HARD	
225	3-947-503-01	SCREW (M1.4X2.5)	
226	X-3941-265-1	CHASSIS ASSY, LS	
227	3-945-784-01	PLATE, CAM, LS	
228	A-7040-306-A	GUIDE (BASE) (S) BLOCK ASSY	
229	X-3941-269-1	ROLLER ASSY, TG3	
230	X-3941-266-1	ARM (S) ASSY, GUIDE	
231	3-945-837-01	SLIDER, GL	
232	3-949-881-01	SLEEVE	
S002	1-572-987-11	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, MP/MP-HG)	

5-6. MECHANISM CHASSIS ASSEMBLY (1)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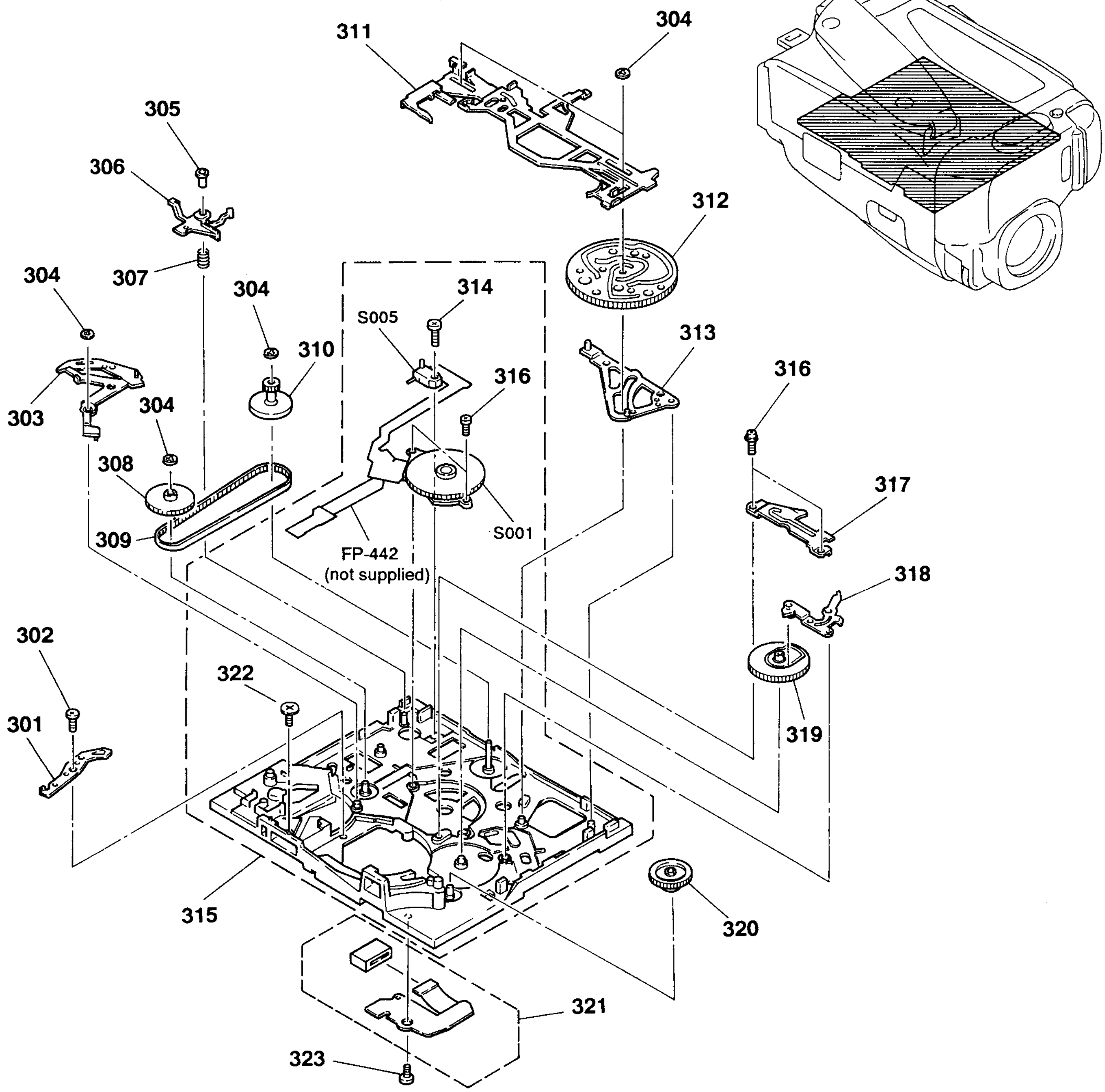
Ref. No.	Part No.	Description	Remark
251	A-7049-521-A	DRUM ASSY, UPPER (DGR-90-R)	
252	3-945-822-01	SPRING, LEAF, TG7 ARM	
253	A-7040-305-A	ARM BLOCK ASSY, TG7	
254	3-947-503-01	SCREW (M1.4X2.5)	
255	X-3941-255-1	PLATE (T) ASSY, SIDE	
256	3-945-735-01	ARM, HC CONVERSION	
257	3-713-786-71	SCREW (M2X5)	
258	3-945-691-01	PLATE (S), SIDE	
259	3-945-701-01	ARM, LS	
260	3-945-702-01	ROLLER, LS	
261	X-3941-262-1	ROLLER ASSY, TG2	
262	3-945-774-01	SPRING, COMPRESSION	
263	3-686-493-01	SCREW (M2X5), P1	
M901	A-7048-585-A	DRUM ASSY (DGH-90A-R)	
M902	8-835-477-01	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM (LOADING)	

5-7. MECHANISM CHASSIS ASSEMBLY (2)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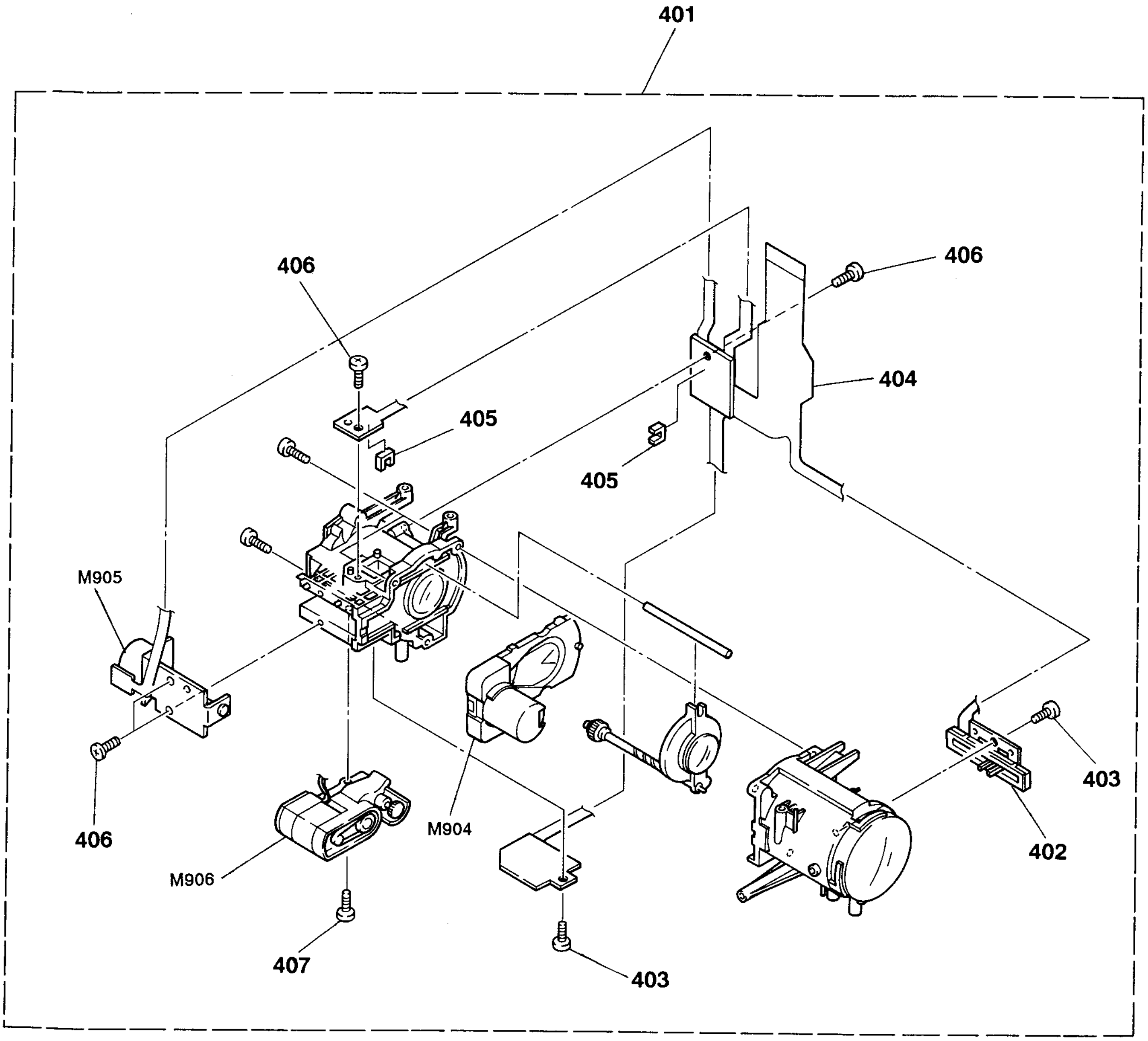
Ref. No.	Part No.	Description	Remark
301	3-945-734-01	ARM, HC DRIVING	
302	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
303	X-3941-259-1	ARM ASSY, PINCH PRESS	
304	3-726-829-01	WASHER, STOPPER	
305	3-945-730-01	SLEEVE, EJECT	
306	3-945-706-01	LEVER, EJECT	
307	3-945-729-01	SPRING, COMPRESSION	
308	X-3941-256-1	GEAR ASSY, CHANGE	
309	3-944-539-01	BELT, RELAY	
310	3-945-695-01	PULLEY, RELAY	
311	X-3941-260-1	SLIDER ASSY, M	
312	3-945-696-01	CAM	
313	X-3941-258-1	ARM ASSY, GL	
314	3-713-786-71	SCREW (M2X5)	
315	A-7040-303-A	CHASSIS ASSY, MECHANICAL	
316	3-947-503-01	SCREW (M1.4X2.5)	
317	3-945-722-01	RETAINER, GEAR	
318	X-3941-257-1	ARM ASSY, FF	
319	3-945-697-01	GEAR (B), L	
320	3-945-700-01	GEAR (A), L	
321	A-7040-311-A	FP-444 ASSY	
322	3-946-848-01	SCREW, TG6 ADJUSTMENT	
323	3-945-756-01	SCREW (M1.4X3)	
S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
S005	1-570-771-21	SWITCH (C DOWN)	

5-8. ZOOM LENS ASSEMBLY (VCL-6210WC)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M904
M906
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402

Ref. No.	Part No.	Description	Remark
401	1-547-548-11	LENS, ZOOM (VCL-6210WC)	
402	3-708-446-01	METER, POTENTIAL	
403	3-708-053-01	SCREW, FB FITTING	
404	3-708-493-01	FLEXIBLE	
405	3-708-435-01	PHOTO INTERRUPTER	
406	3-707-946-01	SCREW	
407	3-708-450-01	SCREW, PZ	
M904	3-708-494-01	METER ASSY, IG (IRIS)	
M905	3-708-491-01	MOTOR ASSY, STEPPING (FOCUS)	
M906	3-708-492-01	MOTOR ASSY, PZ (ZOOM)	

SECTION 6
ELECTRICAL PARTS LIST

AU-138 CD-92

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Hardware (# mark) list is given in the last of this parts list.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

Ref. No.	Part No.	Description			Remark
*	A-7063-321-A	AU-138 BOARD, COMPLETE			
		**********************			
					(Ref. No 2,000 Series)
		(CAPACITOR)			
C601	1-126-607-11	ELECT CHIP	47uF	20%	4V
C605	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C607	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C614	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C615	1-164-373-11	CERAMIC CHIP	0.033uF		25V
C617	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C618	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C627	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C628	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C629	1-126-607-11	ELECT CHIP	47uF	20%	4V
C630	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C631	1-128-006-11	ELECT CHIP	4.7uF	20%	25V
C632	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C636	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C637	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C639	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C640	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C641	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C643	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C645	1-128-006-11	ELECT CHIP	4.7uF	20%	25V
C647	1-128-013-11	ELECT CHIP	1uF	20%	50V
C649	1-128-004-11	ELECT CHIP	10uF	20%	16V
C651	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C654	1-162-977-11	CERAMIC CHIP	0.0018uF	10%	50V
C655	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C657	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C660	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C691	1-128-006-11	ELECT CHIP	4.7uF	20%	25V
C695	1-128-006-11	ELECT CHIP	4.7uF	20%	25V
C699	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
		(CONNECTOR)			
CN601	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P			
CN602	1-573-338-11	CONNECTOR, BOARD TO BOARD 20P			
CN603	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P			
		(IC)			
IC601	8-759-823-19	IC CXA1488R			
IC602	8-749-923-29	IC RS-20E-T			
		(COIL)			
L601	1-410-384-31	INDUCTOR CHIP 18uH			
		(RESISTOR)			
R603	1-216-851-11	METAL CHIP	330K	5%	1/16W
R604	1-216-837-11	METAL CHIP	22K	5%	1/16W
R605	1-216-849-11	METAL CHIP	220K	5%	1/16W
R607	1-216-859-11	METAL CHIP	1.5M	5%	1/16W
R614	1-216-817-11	METAL CHIP	470	5%	1/16W
R615	1-216-839-11	METAL CHIP	33K	5%	1/16W
R616	1-216-864-11	METAL CHIP	0	5%	1/16W
R617	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R618	1-216-839-11	METAL CHIP	33K	5%	1/16W
R619	1-216-864-11	METAL CHIP	0	5%	1/16W
R620	1-216-840-11	METAL CHIP	39K	5%	1/16W
R622	1-216-839-11	METAL CHIP	33K	5%	1/16W
R625	1-216-833-11	METAL CHIP	10K	5%	1/16W
R630	1-216-821-11	METAL CHIP	1K	5%	1/16W
R632	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R633	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R634	1-216-837-11	METAL CHIP	22K	5%	1/16W
R637	1-216-864-11	METAL CHIP	0	5%	1/16W
R677	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R679	1-216-821-11	METAL CHIP	1K	5%	1/16W
R681	1-216-851-11	METAL CHIP	330K	5%	1/16W
R682	1-216-849-11	METAL CHIP	220K	5%	1/16W
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*	A-7063-318-A	CD-92 BOARD, COMPLETE			
		*********************			
					(Ref. No 1,000 Series)
		(CAPACITOR)			
C875	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V
C876	1-128-013-11	ELECT CHIP	1uF	20%	50V
C877	1-128-008-11	ELECT CHIP	3.3uF	20%	35V
C879	1-162-637-11	CERAMIC CHIP	0.47uF		16V
C880	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C881	1-128-004-11	ELECT CHIP	10uF	20%	16V
C882	1-126-607-11	ELECT CHIP	47uF	20%	4V
C884	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C888	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V

Ref. No.	Part No.	Description	Remark
		(CONNECTOR)	
CN875	1-573-308-11	CONNECTOR, BOARD TO BOARD 16P	
		(DIODE)	
D875	8-719-800-76	DIODE 1SS123	
D876	8-719-404-46	DIODE MA110	
D877	8-719-820-05	DIODE 1SS181	
D878	8-719-404-46	DIODE MA110	
		(COIL)	
L875	1-412-064-11	INDUCTOR CHIP 100uH	
		(TRANSISTOR)	
Q875	8-729-425-64	TRANSISTOR 2SD2216Q	
Q876	8-729-427-72	TRANSISTOR XP4501	
Q877	8-729-232-86	TRANSISTOR 2SK1875	
		(RESISTOR)	
R877	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R878	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R879	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R880	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R881	1-216-819-11	METAL CHIP 680 5% 1/16W	
R882	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R883	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R884	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R885	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R887	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	

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Ref. No.	Part No.	Description	Remark
*	A-7071-655-A	CF-32 BOARD, COMPLETE ********************* (Ref. No 7,000 Series)	
		(CONNECTOR)	
CN993	1-566-540-11	CONNECTOR, FPC (NON ZIF) 8P	
		(DIODE)	
D992	8-719-404-46	DIODE MA110	
		(RESISTOR)	
R991	1-216-295-00	METAL CHIP 0 5% 1/10W	
R992	1-216-295-00	METAL CHIP 0 5% 1/10W	
		(SWITCH)	
S991	1-692-111-11	SWITCH, KEY BOARD (FADER)	
S993	1-692-111-11	SWITCH, KEY BOARD (DATE)	
S995	1-692-111-11	SWITCH, KEY BOARD (COUNTER RESET)	
S996	1-692-111-11	SWITCH, KEY BOARD (TIME)	
S997	1-692-024-21	SWITCH, ROTARY (PROGRAM AE)	
		(BUZZER)	
SP991	1-529-107-11	BUZZER, PIEZOELECTRIC	

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Ref. No.	Part No.	Description	Remark
*	A-7071-694-A	CN-65 BOARD, COMPLETE ********************* (Ref. No 6,000 Series)	
		(CONNECTOR)	
CN518	1-573-310-11	CONNECTOR, BOARD TO BOARD 20P	
		(CABLE, FLAT)	
W991	1-696-483-11	CABLE, FLAT (FFC-86)	

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Ref. No.	Part No.	Description	Remark
*⚠	A-7063-320-A	DD-48 BOARD, COMPLETE ********************* (Ref. No 1,000 Series)	
		(CAPACITOR)	
C901	1-164-218-11	CERAMIC CHIP 180PF 0.25PF 50V	
C902	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C903	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C904	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C906	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C907	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C909	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C910	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C911	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C912	1-163-017-00	CERAMIC CHIP 0.0047uF 5% 50V	
C914	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C915	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C916	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C917	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C918	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C919	1-128-530-11	ELECT CHIP 33uF 20% 10V	
C920	1-162-928-11	CERAMIC CHIP 120PF 5% 50V	
C921	1-162-928-11	CERAMIC CHIP 120PF 5% 50V	
C922	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C923	1-135-215-21	TANTAL. CHIP 6.8uF 20% 16V	
C924	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C925	1-164-836-11	CERAMIC CHIP 6.8uF 16V	
C926	1-135-215-21	TANTAL. CHIP 6.8uF 20% 16V	
C927	1-128-530-11	ELECT CHIP 33uF 20% 10V	
C928	1-164-836-11	CERAMIC CHIP 6.8uF 16V	
C929	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C931	1-165-178-11	CERAMIC CHIP 6.8uF 16V	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
C932	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C933	1-128-530-11	ELECT CHIP 33uF 20% 10V	
C934	1-128-530-11	ELECT CHIP 33uF 20% 10V	
C935	1-135-177-21	TANTALUM CHIP 1uF 20% 20V	
C936	1-135-177-21	TANTALUM CHIP 1uF 20% 20V	
C938	1-164-505-11	CERAMIC CHIP 2.2uF 16V	
C939	1-164-505-11	CERAMIC CHIP 2.2uF 16V	
C940	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C942	1-135-177-21	TANTALUM CHIP 1uF 20% 20V	
C943	1-135-177-21	TANTALUM CHIP 1uF 20% 20V	
C946	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C947	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C948	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C949	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C950	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
		(CONNECTOR)	
CN901	1-695-324-11	CONNECTOR, BOARD TO BOARD 42P	
CN902	1-573-506-41	CONNECTOR, FPC (NON ZIF) 4P	
		(DIODE)	
D901	8-719-981-59	DIODE FC805	
D905	8-719-404-46	DIODE MA110	
D906	8-719-404-46	DIODE MA110	
		(IC)	
IC901	8-759-060-94	IC MB3785APFV-G-BND-ER	
		(JACK)	
J901	1-537-281-41	TERMINAL BOARD (BATTERY TERMINAL)	
J902	1-565-276-21	JACK, ULTRA SMALL 1P (REMOTE)	
		(COIL)	
L903	1-424-522-21	COIL, CHOKE 10uH	
L904	1-424-522-21	COIL, CHOKE 10uH	
L905	1-424-522-21	COIL, CHOKE 10uH	
L906	1-424-523-21	COIL, CHOKE 22uH	
L909	1-412-028-11	INDUCTOR CHIP 4.7uH	
L910	1-412-028-11	INDUCTOR CHIP 4.7uH	
L911	1-412-028-11	INDUCTOR CHIP 4.7uH	
L912	1-424-524-21	COIL, CHOKE 47uH	
L913	1-424-524-21	COIL, CHOKE 47uH	
L914	1-412-034-11	INDUCTOR CHIP 330uH	
L915	1-412-034-11	INDUCTOR CHIP 330uH	
L916	1-412-028-11	INDUCTOR CHIP 4.7uH	
		(LINK, IC)	
⚠PS901	1-532-841-21	LINK, IC (PRF1600 1.6A)	
⚠PS902	1-532-841-21	LINK, IC (PRF1600 1.6A)	

Ref. No.	Part No.	Description	Remark
		(TRANSISTOR)	
Q901	8-729-403-27	TRANSISTOR XN4401	
Q902	8-729-402-42	TRANSISTOR UN5213	
Q903	8-729-823-84	TRANSISTOR FP102	
Q904	8-729-804-41	TRANSISTOR 2SB1122-S	
Q905	8-729-823-82	TRANSISTOR FP101	
Q906	8-729-823-82	TRANSISTOR FP101	
Q907	8-729-402-81	TRANSISTOR XN4501	
Q908	8-729-805-25	TRANSISTOR 2SB1121	
Q909	8-729-805-25	TRANSISTOR 2SB1121	
Q910	8-729-014-20	TRANSISTOR RN2304	
		(RESISTOR)	
R901	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R902	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
R903	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R904	1-218-698-11	METAL CHIP 1.8K 0.50% 1/16W	
R905	1-218-724-11	METAL CHIP 22K 0.50% 1/16W	
R906	1-218-708-11	METAL CHIP 4.7K 0.50% 1/16W	
R907	1-216-818-11	METAL CHIP 560 5% 1/16W	
R908	1-216-847-11	METAL CHIP 150K 5% 1/16W	
R909	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R910	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R911	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R912	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R913	1-216-296-00	METAL CHIP 0 5% 1/8W	
R914	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R915	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R916	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R917	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
R918	1-216-811-11	METAL CHIP 150 5% 1/16W	
R919	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
R920	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R921	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R922	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R923	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R924	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R925	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R926	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R927	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R928	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R929	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R930	1-216-182-00	METAL CHIP 220 5% 1/8W	
R931	1-216-182-00	METAL CHIP 220 5% 1/8W	
R932	1-216-182-00	METAL CHIP 220 5% 1/8W	
R933	1-216-194-00	METAL CHIP 680 5% 1/8W	
R935	1-216-864-11	METAL CHIP 0 5% 1/16W	
R936	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R937	1-216-864-11	METAL CHIP 0 5% 1/16W	
R938	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
R939	1-218-883-11	METAL CHIP 33K 0.50% 1/16W	
R940	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R941	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R942	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R943	1-216-296-00	METAL CHIP 0 5% 1/8W	
R944	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R945	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R946	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R947	1-216-295-00	METAL CHIP 0 5% 1/10W	
R949	1-216-296-00	METAL CHIP 0 5% 1/8W	
R950	1-216-864-11	METAL CHIP 0 5% 1/16W	
R951	1-216-296-00	METAL CHIP 0 5% 1/8W	
R952	1-216-864-11	METAL CHIP 0 5% 1/16W	
R953	1-216-864-11	METAL CHIP 0 5% 1/16W	

(SWITCH)

Ref. No.	Part No.	Description	Remark
S901	1-572-467-11	SWITCH, PUSH (1 KEY) (EJECT)	

(TRANSFORMER)

Ref. No.	Part No.	Description	Remark
T901	1-450-874-21	TRANSFORMER, DC-DC CONVERTER	

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* A-7071-654-A ED-35 BOARD, COMPLETE

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(Ref. No 8,000 Series)

(DIODE)

Ref. No.	Part No.	Description	Remark
D986	8-719-404-46	DIODE MA110	
D987	8-719-404-40	DIODE MA121	

(SWITCH)

Ref. No.	Part No.	Description	Remark
S986	1-571-275-31	SWITCH, SLIDE (BEEP)	
S987	1-692-111-11	SWITCH, KEY BOARD (SUMMER TIME)	
S988	1-571-275-31	SWITCH, SLIDE (REMOTE COMMANDER)	
S989	1-692-111-11	SWITCH, KEY BOARD (AREA)	
S990	1-571-275-31	SWITCH, SLIDE (EDIT)	

(CABLE, FLAT)

Ref. No.	Part No.	Description	Remark
W986	1-696-621-11	FP-590 FLEXIBLE BOARD	

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* A-7063-266-A JK-91 BOARD, COMPLETE

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(Ref. No 3,000 Series)

Ref. No.	Part No.	Description	Remark
	3-719-381-01	SCREW (M2X4)	
*	3-948-974-01	FRAME (M), JACK	

(JACK)

Ref. No.	Part No.	Description	Remark
J517	1-537-142-21	TERMINAL BOARD (VIDEO, AUDIO, RFU DC OUT)	

(CABLE, FLAT)

Ref. No.	Part No.	Description	Remark
W517	1-696-482-11	CABLE, FLAT (FFC-85)	

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* A-7071-652-A LI-44 BOARD, COMPLETE

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(Ref. No 4,000 Series)

(CONNECTOR)

Ref. No.	Part No.	Description	Remark
* CN516	1-580-055-21	PIN, CONNECTOR 2P	

(HOLDER, BATTERY)

Ref. No.	Part No.	Description	Remark
H516	1-550-104-32	HOLDER, BATTERY	

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* A-7063-322-A MA-149 BOARD, COMPLETE

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(Ref. No 2,000 Series)

(CAPACITOR)

Ref. No.	Part No.	Description	Remark
C551	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C552	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C553	1-162-960-11	CERAMIC CHIP 220PF 10% 50V	
C554	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C555	1-162-587-11	CERAMIC CHIP 0.039uF 10% 25V	
C556	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C557	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C558	1-162-638-11	CERAMIC CHIP 1uF 16V	
C562	1-162-638-11	CERAMIC CHIP 1uF 16V	
C563	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
C566	1-162-638-11	CERAMIC CHIP 1uF 16V	
C569	1-164-492-11	CERAMIC CHIP 0.15uF 10% 16V	

(CONNECTOR)

Ref. No.	Part No.	Description	Remark
CN551	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	
CN552	1-580-056-21	PIN, CONNECTOR 3P	

(DIODE)

Ref. No.	Part No.	Description	Remark
D552	8-719-404-46	DIODE MA110	

(IC)

Ref. No.	Part No.	Description	Remark
IC551	8-759-822-37	IC LA7293M	

Ref. No.	Part No.	Description	Remark
		(JACK)	
J551	1-568-027-11	JACK, SMALL TYPE 1P (MIC)	
		(TRANSISTOR)	
Q551	8-729-402-55	TRANSISTOR 2SB1218A-R	
		(RESISTOR)	
R551	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R552	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R553	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R554	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R555	1-216-864-11	METAL CHIP 0 5% 1/16W	
R556	1-216-864-11	METAL CHIP 0 5% 1/16W	
R558	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R564	1-216-295-00	METAL CHIP 0 5% 1/10W	
R565	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R566	1-216-864-11	METAL CHIP 0 5% 1/16W	
R571	1-216-296-00	METAL CHIP 0 5% 1/8W	
R572	1-216-296-00	METAL CHIP 0 5% 1/8W	

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Ref. No.	Part No.	Description	Remark
*	A-7071-656-A	MF-191 BOARD, COMPLETE	

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(Ref. No 5,000 Series)

Ref. No.	Part No.	Description	Remark
		(DIODE)	
D971	8-719-404-46	DIODE MA110	
		(RESISTOR)	
R971	1-216-295-00	METAL CHIP 0 5% 1/10W	
		(SWITCH)	
S971	1-692-088-41	SWITHC, TACTILE (FOCUS)	
S972	1-241-865-11	RES, VAR, CARBON 10K (FOCUS RING)	
S973	1-572-467-11	SWITCH, PUSH (1 KEY) (LENS OPEN/CLOSE)	
		(CABLE, FLAT)	
W971	1-696-484-11	CABLE, FLAT (FFC-87)	

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Ref. No.	Part No.	Description	Remark
*	A-7063-319-A	SL-27 BOARD, COMPLETE	

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(Ref. No 5,000 Series)

Ref. No.	Part No.	Description	Remark
		(CAPACITOR)	
C521	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C522	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C524	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C525	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C526	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C527	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
		(CONNECTOR)	
CN521	1-691-482-21	CONNECTOR, FFC/FPC 15P	
CN522	1-691-472-21	CONNECTOR, FFC/FPC 6P	
CN523	1-691-473-21	CONNECTOR, FFC/FPC 7P	
		(IC)	
IC521	8-759-059-09	IC LB8111V	
		(TRANSISTOR)	
Q521	8-729-402-81	TRANSISTOR XN4501	
		(RESISTOR)	
R522	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R523	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R524	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R525	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R528	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R530	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R532	1-216-174-00	METAL CHIP 100 5% 1/8W	
R533	1-216-864-11	METAL CHIP 0 5% 1/16W	
		(NETWORK, RES)	
RB521	1-236-424-11	NETWORK, RES 10K	
RB522	1-236-424-11	NETWORK, RES 10K	
		(FLEXIBLE BOARD)	
W521	1-642-186-11	FP-437 FLEXIBLE BOARD	
W522	1-696-490-12	FP-589 FLEXIBLE BOARD	

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Ref. No.	Part No.	Description	Remark
*	A-7071-651-A	SW-205 BOARD, COMPLETE	

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(Ref. No 7,000 Series)

Ref. No.	Part No.	Description	Remark
		(SWITCH)	
S519	1-553-977-00	SWITCH, SLIDE (STBY)	
S520	1-571-315-11	SWITCH, KEY BOARD (START/STOP)	
		(CABLE, FLAT)	
W519	1-696-488-11	CABLE, FLAT (FFC-92)	

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VC-122

Ref. No.	Part No.	Description				Remark
*	A-7063-317-A	VC-122 BOARD, COMPLETE				
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						(Ref. No 3,000 Series)
		(CAPACITOR)				
C701	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V	
C702	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	
C703	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C705	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C706	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	
C707	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C708	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C709	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C710	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C711	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C712	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C713	1-162-947-11	CERAMIC CHIP	33PF	5%	50V	
C714	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C716	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C717	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C718	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C719	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C721	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C722	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C723	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C724	1-164-634-11	CERAMIC CHIP	1uF		16V	
C725	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C726	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C727	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C728	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C729	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C730	1-162-971-11	CERAMIC CHIP	0.001uF		50V	
C731	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C733	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C734	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C735	1-162-971-11	CERAMIC CHIP	0.001uF		50V	
C736	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C737	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C738	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C739	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C741	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C742	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C745	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C749	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C750	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C751	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C752	1-162-943-11	CERAMIC CHIP	15PF	5%	50V	
C801	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C802	1-162-920-11	CERAMIC CHIP	27PF	5%	50V	
C803	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C804	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C805	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C806	1-162-971-11	CERAMIC CHIP	0.001uF		50V	
C807	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C808	1-135-091-00	TANTALUM CHIP	1uF	20%	16V	
C809	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C810	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C811	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C813	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C814	1-162-971-11	CERAMIC CHIP	0.001uF		50V	
C815	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C816	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C817	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C818	1-135-091-00	TANTALUM CHIP	1uF	20%	16V	
C819	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C820	1-135-091-00	TANTALUM CHIP	1uF	20%	16V	
C821	1-162-947-11	CERAMIC CHIP	33PF	5%	50V	
C823	1-135-091-00	TANTALUM CHIP	1uF	20%	16V	
C824	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C826	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C827	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C830	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C832	1-162-971-11	CERAMIC CHIP	0.001uF		50V	
C833	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C834	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C835	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C836	1-126-205-11	ELECT CHIP	47uF	20%	6.3V	
C837	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C838	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V	
C839	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C841	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C851	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	
C852	1-162-971-11	CERAMIC CHIP	0.001uF		50V	
C853	1-164-634-11	CERAMIC CHIP	1uF		16V	
C854	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C855	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C856	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C857	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C858	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C859	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C860	1-126-205-11	ELECT CHIP	47uF	20%	6.3V	
C861	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C862	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C863	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C864	1-162-638-11	CERAMIC CHIP	1uF		16V	
C866	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C868	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C869	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V	
C870	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C871	1-164-634-11	CERAMIC CHIP	1uF		16V	

(CONNECTOR)

Ref. No.	Part No.	Description	Remark
CN701	1-573-372-21	CONNECTOR, BOARD TO BOARD 18P	
CN801	1-573-336-11	CONNECTOR, BOARD TO BOARD 16P	
CN851	1-573-361-11	CONNECTOR, FFC/FPC 21P	

(TRIMMER)

Ref. No.	Part No.	Description	Remark
CT801	1-141-356-11	CAP, ADJ 6P	

(FILTER)

Ref. No.	Part No.	Description	Remark
FL701	1-236-834-21	FILTER, LOW PASS	
FL702	1-415-751-21	DELAY LINE, LC (YH)	

(IC)

Ref. No.	Part No.	Description	Remark
IC701	8-759-243-19	IC TC7SU04F	
IC702	8-759-064-36	IC MB88346BPFV-EF	
IC703	8-759-710-07	IC NJM2234M	
IC704	8-752-348-92	IC CXD2101AR	
IC705	8-759-063-18	IC CXD2103AR	
IC706	8-752-355-56	IC CXD2104BN	
IC707	8-752-347-93	IC CXD2100AQ	
IC709	8-752-840-64	IC CXP80624-434R	
IC712	8-759-073-67	IC BR9021AF	
IC801	8-752-350-16	IC CXD1257AR	
IC802	8-752-056-39	IC CXA1507BR	
IC803	8-752-053-26	IC CXA1399Q	
IC804	8-752-327-48	IC CXD1250N	
IC805	8-752-054-61	IC CXA1390AR	
IC851	8-759-701-24	IC NJM3414M	
IC852	8-759-998-96	IC LM324D	
IC853	8-759-058-47	IC MPC1724VMEL	
IC854	8-759-823-51	IC LB1830M	
IC856	8-759-998-98	IC LM358D	

(COIL)

Ref. No.	Part No.	Description	Remark
L701	1-412-006-31	INDUCTOR CHIP 10uH	
L703	1-412-052-21	INDUCTOR CHIP 1uH	
L704	1-412-006-31	INDUCTOR CHIP 10uH	
L705	1-412-979-21	INDUCTOR 1uH	
L706	1-412-062-11	INDUCTOR CHIP 47uH	
L708	1-412-979-21	INDUCTOR 1uH	
L710	1-412-052-21	INDUCTOR CHIP 1uH	
L711	1-412-058-11	INDUCTOR CHIP 10uH	
L712	1-412-052-21	INDUCTOR CHIP 1uH	
L714	1-412-006-31	INDUCTOR CHIP 10uH	
L715	1-412-058-11	INDUCTOR CHIP 10uH	
L717	1-412-058-11	INDUCTOR CHIP 10uH	
L720	1-412-006-31	INDUCTOR CHIP 10uH	
L721	1-410-391-11	INDUCTOR CHIP 68uH	
L801	1-412-029-11	INDUCTOR CHIP 10uH	
L802	1-412-006-31	INDUCTOR CHIP 10uH	
L803	1-412-058-11	INDUCTOR CHIP 10uH	
L804	1-412-058-11	INDUCTOR CHIP 10uH	
L851	1-412-058-11	INDUCTOR CHIP 10uH	
L853	1-412-031-11	INDUCTOR CHIP 47uH	

(TRANSISTOR)

Ref. No.	Part No.	Description	Remark
Q701	8-729-928-87	TRANSISTOR DTC124EE	
Q702	8-729-427-74	TRANSISTOR XP4601	
Q703	8-729-427-74	TRANSISTOR XP4601	
Q704	8-729-425-50	TRANSISTOR 2SB1462Q	
Q706	8-729-425-64	TRANSISTOR 2SD2216Q	
Q707	8-729-428-84	TRANSISTOR UN9111	
Q708	8-729-425-64	TRANSISTOR 2SD2216Q	
Q709	8-729-427-72	TRANSISTOR XP4501	
Q801	8-729-425-64	TRANSISTOR 2SD2216Q	
Q802	8-729-427-70	TRANSISTOR XP4401	
Q851	8-729-425-64	TRANSISTOR 2SD2216Q	
Q852	8-729-013-88	TRANSISTOR RN1302	
Q853	8-729-427-70	TRANSISTOR XP4401	

(RESISTOR)

Ref. No.	Part No.	Description	Remark
R701	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R702	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R703	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R704	1-216-815-11	METAL CHIP 330 5% 1/16W	
R705	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R706	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R707	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R708	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R709	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R710	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R711	1-216-864-11	METAL CHIP 0 5% 1/16W	
R712	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R713	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R714	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R715	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R716	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R718	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R719	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R721	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R722	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R723	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R724	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R725	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R727	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R728	1-216-813-11	METAL CHIP 220 5% 1/16W	
R729	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R730	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R731	1-216-295-00	METAL CHIP 0 5% 1/10W	
R732	1-216-821-11	METAL CHIP 1K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R733	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R734	1-216-817-11	METAL CHIP 470 5% 1/16W	
R735	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R736	1-216-864-11	METAL CHIP 0 5% 1/16W	
R738	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R739	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R742	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R744	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R745	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R748	1-216-864-11	METAL CHIP 0 5% 1/16W	
R749	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R750	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R751	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R752	1-216-817-11	METAL CHIP 470 5% 1/16W	
R753	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R754	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R755	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R756	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R757	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R758	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R759	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R760	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R761	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R762	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R769	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R770	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R771	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R775	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R776	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R777	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R778	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R779	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R780	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R781	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R782	1-216-813-11	METAL CHIP 220 5% 1/16W	
R783	1-216-863-11	METAL CHIP 3.3M 5% 1/16W	
R784	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R785	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R787	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R788	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R791	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R792	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R793	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R794	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R795	1-216-815-11	METAL CHIP 330 5% 1/16W	
R796	1-216-817-11	METAL CHIP 470 5% 1/16W	
R797	1-216-818-11	METAL CHIP 560 5% 1/16W	
R800	1-216-309-00	METAL CHIP 5.6 5% 1/10W	
R801	1-216-864-11	METAL CHIP 0 5% 1/16W	
R802	1-216-835-11	METAL CHIP 15K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R803	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R804	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R805	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R806	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R807	1-216-817-11	METAL CHIP 470 5% 1/16W	
R808	1-216-801-11	METAL CHIP 22 5% 1/16W	
R809	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R810	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R812	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R813	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R816	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R819	1-216-805-11	METAL CHIP 47 5% 1/16W	
R821	1-216-863-11	METAL CHIP 3.3M 5% 1/16W	
R823	1-218-721-11	METAL CHIP 16K 0.50% 1/16W	
R825	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R826	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R827	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R828	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
R829	1-218-744-11	METAL CHIP 150K 0.50% 1/16W	
R830	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R851	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R852	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R853	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R854	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R855	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R856	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R857	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R858	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R859	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R860	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R861	1-218-724-11	METAL CHIP 22K 0.50% 1/16W	
R862	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R863	1-216-855-11	METAL CHIP 680K 5% 1/16W	
R864	1-216-134-00	METAL CHIP 2.2 5% 1/8W	
R865	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R866	1-216-820-11	METAL CHIP 820 5% 1/16W	
R867	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R868	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R869	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R870	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R871	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R872	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R873	1-216-814-11	METAL CHIP 270 5% 1/16W	
R874	1-216-842-11	METAL CHIP 56K 5% 1/16W	
		(NETWORK, RES)	
RB701	1-236-420-11	NETWORK, RES 4.7K	
RB702	1-236-432-11	NETWORK, RES 47K	
RB703	1-236-412-11	NETWORK, RES 1.0K	
RB704	1-236-416-11	NETWORK, RES 2.2K	

Ref. No.	Part No.	Description	Remark
RB705	1-236-416-11	NETWORK, RES 2.2K	
RB706	1-236-412-11	NETWORK, RES 1.0K	
RB707	1-236-412-11	NETWORK, RES 1.0K	
RB708	1-236-412-11	NETWORK, RES 1.0K	
		(CRYSTAL)	
X701	1-579-553-11	VIBRATOR (12MHz)	
X801	1-579-621-11	VIBRATOR, CRYSTAL (28.6363MHz)	

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* A-7063-220-A VF-42 BOARD, COMPLETE
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(Ref. No 1,000 Series)

Ref. No.	Part No.	Description				Remark
	3-942-888-01	HOLDER, LED				
		(CAPACITOR)				
C501	1-126-176-11	ELECT	220uF	20%	10V	
C502	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V	
C503	1-163-109-00	CERAMIC CHIP	47PF	5%	50V	
⚠C504	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
⚠C505	1-164-758-11	CERAMIC CHIP	0.0039uF	5%	50V	
⚠C506	1-164-715-11	CERAMIC CHIP	0.0068uF	5%	50V	
C507	1-127-515-11	ELECT(SOLID)	47uF	20%	6.3V	
C508	1-164-611-11	CERAMIC CHIP	0.001uF	10%	500V	
C509	1-124-257-00	ELECT	2.2uF	20%	50V	
C510	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V	
C511	1-126-090-11	ELECT	82uF	20%	10V	
C512	1-137-306-11	FILM CHIP	0.1uF	5%	16V	
C513	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V	
C514	1-131-381-00	TANTALUM	47uF	10%	10V	
C515	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V	
C516	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V	
		(CONNECTOR)				
* CN501	1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P				
* CN502	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P				
* CN503	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P				
		(DIODE)				
D501	8-719-820-65	DIODE TLS221				
D502	8-719-984-02	LED	BR4371F			
D503	8-719-400-20	DIODE MA152WA				
		(IC)				
IC501	8-759-420-01	IC AN2512S				
		(COIL)				
L501	1-408-976-21	INDUCTOR	33uH			
L502	1-408-785-21	INDUCTOR CHIP 47uH				
⚠L503	1-459-876-41	COIL, FERRITE (HLC)				
		(TRANSISTOR)				
Q501	8-729-100-66	TRANSISTOR 2SC1623				
Q502	8-729-216-31	TRANSISTOR 2SA1163-G				
Q504	8-729-106-68	TRANSISTOR 2SD1615A-GP				
		(RESISTOR)				
R501	1-216-033-00	METAL CHIP	220	5%	1/10W	
R502	1-216-041-00	METAL CHIP	470	5%	1/10W	
R503	1-216-041-00	METAL CHIP	470	5%	1/10W	
R506	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R507	1-216-047-00	METAL CHIP	820	5%	1/10W	
R508	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R509	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R510	1-216-005-00	METAL CHIP	15	5%	1/10W	
R511	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R512	1-216-131-11	METAL CHIP	2.7M	5%	1/10W	
R513	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R514	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R515	1-216-131-11	METAL CHIP	2.7M	5%	1/10W	
R516	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R517	1-216-025-00	METAL CHIP	100	5%	1/10W	
R518	1-216-308-00	METAL CHIP	4.7	5%	1/10W	
R519	1-216-336-11	METAL CHIP	47K	1%	1/10W	
R520	1-216-107-00	METAL CHIP	270K	5%	1/10W	
R521	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R522	1-216-160-00	METAL CHIP	27	5%	1/8W	
R523	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R524	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R525	1-216-097-00	METAL CHIP	100K	5%	1/10W	
		(VARIABLE RESISTOR)				
RV501	1-241-596-11	RES, ADJ, METAL GRAZE 47K				
RV502	1-241-590-11	RES, ADJ, METAL GRAZE 470				
RV503	1-241-592-11	RES, ADJ, METAL GRAZE 2.2K				
RV504	1-228-762-00	RES, ADJ, METAL CHIP 1M				
		(TRANSFORMER)				
⚠T501	1-439-486-11	TRANSFORMER ASSY, FLYBACK				
		(THERMISTOR)				
TH501	1-809-350-21	THERMISTOR, NTC (2125) 500				
		(CABLE, FLAT)				
⚠W501	1-540-019-21	SOCKET ASSY, CRT				

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The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

VK-27 **VS-95**

Ref. No.	Part No.	Description	Remark
*	A-7071-653-A	VK-27 BOARD, COMPLETE	
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			(Ref. No 9,000 Series)
		(DIODE)	
D976	8-719-404-46	DIODE MA110	
		(SWITCH)	
S976	1-572-921-31	SWITCH, KEY BOARD (STOP)	
S977	1-692-260-11	SWITCH, SLIDE (POWER)	
S978	1-692-247-11	SWITCH, TACTIL (2 CLICK)	(EDIT SEARCH (-)
S979	1-572-921-31	SWITCH, KEY BOARD (REW)	
S980	1-572-921-31	SWITCH, KEY BOARD (PB)	
S981	1-692-247-11	SWITCH, TACTIL (2 CLICK)	(EDIT SEARCH (+)
S983	1-572-921-31	SWITCH, KEY BOARD (FF)	
S984	1-572-921-31	SWITCH, KEY BOARD (PAUSE)	
		(CABLE, FLAT)	
W987	1-696-622-11	PF-591 FLEXIBLE BOARD	
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*	A-7063-316-A	VS-95 BOARD, COMPLETE	
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			(Ref. No 4,000 Series)
	1-691-471-11	CONNECTOR, TRANSLATION 11P	
		(CAPACITOR)	
C001	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C002	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C003	1-162-955-11	CERAMIC CHIP 150PF 5% 50V	
C004	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C005	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C006	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C009	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C010	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C011	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C012	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C013	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C014	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C018	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C019	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C020	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C021	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C022	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C023	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C024	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C025	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C026	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C027	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C028	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C029	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C030	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C035	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C049	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C057	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C058	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C059	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C061	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C063	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C064	1-162-995-11	CERAMIC CHIP 0.022uF 50V	
C065	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C066	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C067	1-162-995-11	CERAMIC CHIP 0.022uF 50V	
C068	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C069	1-162-948-11	CERAMIC CHIP 39PF 5% 50V	
C070	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C072	1-162-943-11	CERAMIC CHIP 15PF 5% 50V	
C073	1-162-951-11	CERAMIC CHIP 68PF 5% 50V	
C074	1-162-956-11	CERAMIC CHIP 180PF 5% 50V	
C075	1-162-942-11	CERAMIC CHIP 12PF 5% 50V	
C077	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C078	1-162-934-11	CERAMIC CHIP 3PF 0.25PF50V	
C080	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C081	1-162-944-11	CERAMIC CHIP 18PF 5% 50V	
C082	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C083	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C085	1-162-947-11	CERAMIC CHIP 33PF 5% 50V	
C086	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C091	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C121	1-162-971-11	CERAMIC CHIP 0.001uF 50V	
C122	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C123	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C124	1-164-346-11	CERAMIC CHIP 1uF 16V	
C125	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C126	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C127	1-164-145-11	CERAMIC CHIP 390PF 5% 50V	
C128	1-162-943-11	CERAMIC CHIP 15PF 5% 50V	
C129	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C130	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C131	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C132	1-163-118-00	CERAMIC CHIP 110PF 5% 50V	
C133	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C135	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C136	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C137	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C150	1-162-944-11	CERAMIC CHIP 18PF 5% 50V	
C151	1-162-974-11	CERAMIC CHIP 0.01uF 50V	

Ref. No.	Part No.	Description				Remark
C156	1-162-948-11	CERAMIC CHIP	39PF	5%	50V	
C159	1-162-946-11	CERAMIC CHIP	27PF	5%	50V	
C161	1-162-953-11	CERAMIC CHIP	100PF	5%	50V	
C167	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C170	1-162-568-11	CERAMIC CHIP	0.33uF		25V	
C171	1-162-638-11	CERAMIC CHIP	1uF		16V	
C173	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C175	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C176	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C177	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C178	1-164-145-11	CERAMIC CHIP	390PF	5%	50V	
C179	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C180	1-162-947-11	CERAMIC CHIP	33PF	5%	50V	
C181	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V	
C182	1-162-958-11	CERAMIC CHIP	270PF	5%	50V	
C187	1-162-943-11	CERAMIC CHIP	15PF	5%	50V	
C188	1-162-958-11	CERAMIC CHIP	270PF	5%	50V	
C189	1-164-362-11	CERAMIC CHIP	470PF	5%	50V	
C192	1-162-958-11	CERAMIC CHIP	270PF	5%	50V	
C193	1-162-953-11	CERAMIC CHIP	100PF	5%	50V	
C194	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C199	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V	
C205	1-162-949-11	CERAMIC CHIP	47PF	5%	50V	
C206	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C207	1-162-952-11	CERAMIC CHIP	82PF	5%	50V	
C208	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	
C209	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C213	1-164-222-11	CERAMIC CHIP	0.22uF		25V	
C214	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C216	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C217	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C218	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C219	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C220	1-126-246-11	ELECT CHIP	220uF	20%	4V	
C221	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V	
C222	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C223	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C225	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C226	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C227	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C228	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C229	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V	
C230	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C231	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C232	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V	
C233	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C234	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C235	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C236	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C237	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C238	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C239	1-162-954-11	CERAMIC CHIP	120PF	5%	50V	
C240	1-162-959-11	CERAMIC CHIP	330PF	5%	50V	
C241	1-126-607-11	ELECT CHIP	47uF	20%	4V	
C242	1-162-960-11	CERAMIC CHIP	220PF	10%	50V	
C245	1-163-035-00	CERAMIC CHIP	0.047uF		50V	
C246	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V	
C247	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C248	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C249	1-162-959-11	CERAMIC CHIP	330PF	5%	50V	
C250	1-164-145-11	CERAMIC CHIP	390PF	5%	50V	
C254	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C255	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C256	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C257	1-162-949-11	CERAMIC CHIP	47PF	5%	50V	
C259	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C260	1-162-945-11	CERAMIC CHIP	22PF	5%	50V	
C261	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C262	1-162-954-11	CERAMIC CHIP	120PF	5%	50V	
C263	1-162-951-11	CERAMIC CHIP	68PF	5%	50V	
C264	1-162-950-11	CERAMIC CHIP	56PF	5%	50V	
C265	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	
C266	1-162-953-11	CERAMIC CHIP	100PF	5%	50V	
C267	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C268	1-162-955-11	CERAMIC CHIP	150PF	5%	50V	
C269	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C270	1-162-947-11	CERAMIC CHIP	33PF	5%	50V	
C271	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C272	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C273	1-126-205-11	ELECT CHIP	47uF	20%	6.3V	
C278	1-162-638-11	CERAMIC CHIP	1uF		16V	
C279	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C280	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C281	1-135-146-21	TANTALUM CHIP	0.68uF	20%	25V	
C282	1-135-091-00	TANTALUM CHIP	1uF	20%	16V	
C283	1-135-091-00	TANTALUM CHIP	1uF	20%	16V	
C284	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V	
C285	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C286	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C288	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C289	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C290	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C291	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C292	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V	
C294	1-162-638-11	CERAMIC CHIP	1uF		16V	
C295	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C296	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C297	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C298	1-162-947-11	CERAMIC CHIP	33PF	5%	50V	
C299	1-162-949-11	CERAMIC CHIP	47PF	5%	50V	

Ref. No.	Part No.	Description			Remark
C300	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C301	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C302	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C303	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C304	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C305	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C306	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C307	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C401	1-164-346-11	CERAMIC CHIP	1uF		16V
C402	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C404	1-164-346-11	CERAMIC CHIP	1uF		16V
C406	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C407	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C408	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C409	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C412	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C413	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C414	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C415	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C416	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C417	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C418	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C420	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C421	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C422	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C423	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C424	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C425	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C426	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C427	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C428	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C429	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C430	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C431	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C432	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V
C433	1-162-937-11	CERAMIC CHIP	6PF	0.5PF	50V
C434	1-162-942-11	CERAMIC CHIP	12PF	5%	50V
C435	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C436	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C437	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C438	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C439	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V
C440	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C441	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C442	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C444	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C445	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C446	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C447	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C449	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C450	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C451	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C452	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C453	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C454	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C455	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C456	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C457	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C458	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C459	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C460	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C461	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C462	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C463	1-135-215-21	TANTAL. CHIP	6.8uF	20%	16V
C464	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C465	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C466	1-164-298-11	CERAMIC CHIP	0.15uF	10%	25V
C467	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C468	1-164-298-11	CERAMIC CHIP	0.15uF	10%	25V
C469	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C470	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C471	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C472	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C473	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C474	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C475	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C476	1-135-179-21	TANTAL. CHIP	2.2uF	20%	16V
C477	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C478	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C481	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C482	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C483	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C484	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C485	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C486	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C487	1-128-530-11	ELECT CHIP	33uF	20%	10V

(FILTER, CERAMIC)

Ref. No.	Part No.	Description	Remark
CF151	1-579-371-11	FILTER, CERAMIC	

(CONNECTOR)

Ref. No.	Part No.	Description	Remark
CN002	1-569-775-21	PIN, CONNECTOR 5P	
CN101	1-566-538-11	CONNECTOR, FPC (NON ZIF) 6P	
CN102	1-580-789-21	PIN, CONNECTOR (SMD) 6P	
CN401	1-573-310-11	CONNECTOR, BOARD TO BOARD 20P	
CN403	1-573-338-11	CONNECTOR, BOARD TO BOARD 20P	
CN404	1-695-325-11	CONNECTOR, BOARD TO BOARD 42P	
CN406	1-573-343-21	CONNECTOR, BOARD TO BOARD 30P	
* CN407	1-580-055-21	PIN, CONNECTOR 2P	

Ref. No.	Part No.	Description	Remark
		(DIODE)	
D001	8-719-800-76	DIODE 1SS123	
D121	8-719-027-50	DIODE MA142WK	
D152	8-719-027-48	DIODE MA142WA	
D159	8-719-027-50	DIODE MA142WK	
D160	8-719-027-50	DIODE MA142WK	
D161	8-719-404-46	DIODE MA110	
D162	8-719-027-50	DIODE MA142WK	
D163	8-719-027-50	DIODE MA142WK	
D401	8-719-421-27	DIODE MA728	
D402	8-719-027-50	DIODE MA142WK	
D403	8-719-404-46	DIODE MA110	
		(FILTER)	
FL121	1-236-188-11	FILTER, BAND PASS	
FL152	1-236-849-21	FILTER, BAND PASS	
FL153	1-236-186-11	FILTER, BAND PASS	
FL154	1-239-055-21	FILTER, LOW PASS (CCD.PAL.Y)	
FL155	1-236-848-21	FILTER, LOW PASS	
FL401	1-406-452-11	COIL, OSC	
		(IC)	
IC001	8-752-033-38	IC CXA1202R	
IC003	8-752-053-21	IC CXA1211M	
IC121	8-759-605-61	IC CXA1203N	
IC151	8-752-065-54	IC CXA1207AR	
IC152	8-752-065-56	IC CXA1208R	
IC154	8-752-333-24	IC CXL1506M	
IC155	8-752-053-21	IC CXA1211M	
IC156	8-759-055-82	IC M62353GP	
IC158	8-759-055-82	IC M62353GP	
IC159	8-759-636-33	IC CXA1452N	
IC401	8-759-056-84	IC S-8420AF	
IC402	8-752-838-20	IC CXP80624-428R	
IC403	8-759-096-79	IC uPD75316GF-318-3B9	
IC404	8-759-059-42	IC CXA1481AR	
IC405	8-759-044-78	IC BR9011BF-RE2	
IC406	8-759-081-96	IC uPD6456GS-620	
IC407	8-759-145-63	IC uPD7564G-540	
IC408	8-759-057-60	IC MCD004BM	
IC409	8-759-999-02	IC TL1596CDB	
IC410	8-759-062-02	IC MPC1720VM	
		(COIL)	
L001	1-410-381-11	INDUCTOR CHIP 10uH	
L002	1-412-066-21	INDUCTOR CHIP 220uH	
L003	1-412-066-21	INDUCTOR CHIP 220uH	
L005	1-412-060-11	INDUCTOR CHIP 22uH	
L007	1-412-058-11	INDUCTOR CHIP 10uH	
L008	1-410-658-31	INDUCTOR CHIP 220uH	
L009	1-410-380-31	INDUCTOR CHIP 8.2uH	
L010	1-410-655-31	INDUCTOR CHIP 120uH	
L011	1-412-280-31	INDUCTOR 330uH	
L012	1-410-387-11	INDUCTOR CHIP 33uH	
L013	1-410-657-21	INDUCTOR CHIP 180uH	
L015	1-410-381-11	INDUCTOR CHIP 10uH	
L121	1-410-381-11	INDUCTOR CHIP 10uH	
L150	1-410-384-31	INDUCTOR CHIP 18uH	
L152	1-410-385-11	INDUCTOR CHIP 22uH	
L154	1-410-390-11	INDUCTOR CHIP 56uH	
L155	1-410-390-11	INDUCTOR CHIP 56uH	
L160	1-412-058-11	INDUCTOR CHIP 10uH	
L161	1-410-385-11	INDUCTOR CHIP 22uH	
L162	1-412-280-31	INDUCTOR 330uH	
L163	1-410-167-41	INDUCTOR CHIP 820uH	
L164	1-410-657-21	INDUCTOR CHIP 180uH	
L169	1-410-392-11	INDUCTOR CHIP 82uH	
L170	1-410-381-11	INDUCTOR CHIP 10uH	
L171	1-410-384-31	INDUCTOR CHIP 18uH	
L175	1-410-393-11	INDUCTOR CHIP 100uH	
L176	1-410-656-11	INDUCTOR CHIP 150uH	
L177	1-412-058-11	INDUCTOR CHIP 10uH	
L178	1-412-062-11	INDUCTOR CHIP 47uH	
L179	1-410-379-31	INDUCTOR CHIP 6.8uH	
L180	1-410-393-11	INDUCTOR CHIP 100uH	
L181	1-410-393-11	INDUCTOR CHIP 100uH	
L182	1-410-655-31	INDUCTOR CHIP 120uH	
L185	1-412-058-11	INDUCTOR CHIP 10uH	
L186	1-412-052-21	INDUCTOR CHIP 1uH	
L401	1-412-056-11	INDUCTOR CHIP 4.7uH	
L402	1-412-058-11	INDUCTOR CHIP 10uH	
L403	1-412-062-11	INDUCTOR CHIP 47uH	
L404	1-412-058-11	INDUCTOR CHIP 10uH	
L405	1-412-058-11	INDUCTOR CHIP 10uH	
L406	1-412-058-11	INDUCTOR CHIP 10uH	
L407	1-412-052-21	INDUCTOR CHIP 1uH	
		(LINK, IC)	
⚠PS401	1-576-122-21	LINK, IC (CCP2E10 0.4A)	
⚠PS402	1-576-123-21	LINK, IC (CCP2E20 0.8A)	
		(TRANSISTOR)	
Q001	8-729-216-22	TRANSISTOR 2SA1162	
Q003	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q008	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q010	8-729-403-35	TRANSISTOR UN5113	
Q019	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q020	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q021	8-729-905-23	TRANSISTOR 2SA1576-R	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
Q022	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q024	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q025	8-729-014-16	TRANSISTOR RN2302	
Q026	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q121	8-729-403-35	TRANSISTOR UN5113	
Q123	8-729-402-42	TRANSISTOR UN5213	
Q124	8-729-403-35	TRANSISTOR UN5113	
Q125	8-729-117-73	TRANSISTOR 2SC4178-F14	
Q126	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q151	8-729-101-07	TRANSISTOR 2SB798-DL	
Q152	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q154	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q158	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q160	8-729-403-35	TRANSISTOR UN5113	
Q161	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q162	8-729-403-35	TRANSISTOR UN5113	
Q166	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q168	8-729-403-35	TRANSISTOR UN5113	
Q170	8-729-420-20	TRANSISTOR XN4312	
Q171	8-729-117-73	TRANSISTOR 2SC4178-F14	
Q175	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q176	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q177	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q178	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q180	8-729-422-54	TRANSISTOR XN4215	
Q182	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q183	8-729-420-53	TRANSISTOR UN5115	
Q184	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q189	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q191	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q192	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q194	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q195	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q196	8-729-403-35	TRANSISTOR UN5113	
Q199	8-729-807-87	TRANSISTOR 2SB1295-UL6	
Q200	8-729-013-88	TRANSISTOR RN1302	
Q203	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q204	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q205	8-729-402-42	TRANSISTOR UN5213	
Q207	8-729-403-35	TRANSISTOR UN5113	
Q208	8-729-013-88	TRANSISTOR RN1302	
Q210	8-729-402-42	TRANSISTOR UN5213	
Q212	8-729-402-55	TRANSISTOR 2SB1218A-R	
Q214	8-729-420-12	TRANSISTOR XN4213	
Q217	8-729-402-42	TRANSISTOR UN5213	
Q219	8-729-403-35	TRANSISTOR UN5113	
Q220	8-729-402-42	TRANSISTOR UN5213	
Q221	8-729-420-12	TRANSISTOR XN4213	
Q222	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q223	8-729-402-42	TRANSISTOR UN5213	

Ref. No.	Part No.	Description				Remark
Q229	8-729-402-55	TRANSISTOR 2SB1218A-R				
Q230	8-729-402-32	TRANSISTOR 2SD1819A-R				
Q231	8-729-402-55	TRANSISTOR 2SB1218A-R				
Q232	8-729-402-32	TRANSISTOR 2SD1819A-R				
Q233	8-729-402-32	TRANSISTOR 2SD1819A-R				
Q234	8-729-402-55	TRANSISTOR 2SB1218A-R				
Q236	8-729-420-56	TRANSISTOR UN511E				
Q237	8-729-425-50	TRANSISTOR 2SB1462Q				
Q401	8-729-402-48	TRANSISTOR UN521E				
Q403	8-729-403-35	TRANSISTOR UN5113				
Q405	8-729-907-00	TRANSISTOR DTC114EU				
Q409	8-729-017-67	TRANSISTOR 2SB1574				
		(RESISTOR)				
R001	1-216-801-11	METAL CHIP	22	5%	1/16W	
R002	1-216-818-11	METAL CHIP	560	5%	1/16W	
R004	1-216-815-11	METAL CHIP	330	5%	1/16W	
R005	1-216-817-11	METAL CHIP	470	5%	1/16W	
R006	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R007	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R012	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R013	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R016	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R017	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R020	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R021	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R022	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R023	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R024	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R025	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R026	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R027	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R028	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R029	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R030	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R031	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R033	1-216-791-11	METAL CHIP	3.3	5%	1/16W	
R049	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R050	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R051	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R052	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R054	1-216-817-11	METAL CHIP	470	5%	1/16W	
R055	1-216-820-11	METAL CHIP	820	5%	1/16W	
R056	1-216-864-11	METAL CHIP	0	5%	1/16W	
R057	1-216-818-11	METAL CHIP	560	5%	1/16W	
R058	1-216-818-11	METAL CHIP	560	5%	1/16W	
R060	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R061	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R062	1-216-818-11	METAL CHIP	560	5%	1/16W	
R063	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R064	1-216-817-11	METAL CHIP	470	5%	1/16W	
R065	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R066	1-216-809-11	METAL CHIP	100	5%	1/16W	
R067	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R070	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R071	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R072	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R076	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R078	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R079	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R081	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R082	1-216-804-11	METAL CHIP	39	5%	1/16W	
R083	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R085	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R086	1-216-817-11	METAL CHIP	470	5%	1/16W	
R087	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R088	1-216-808-11	METAL CHIP	82	5%	1/16W	
R090	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R097	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R122	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R123	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R124	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R125	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R126	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R127	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R129	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R130	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R131	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R132	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R133	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R134	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R135	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R136	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R137	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R138	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R139	1-216-817-11	METAL CHIP	470	5%	1/16W	
R140	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R141	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R142	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R143	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R144	1-216-817-11	METAL CHIP	470	5%	1/16W	
R145	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R146	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R150	1-216-864-11	METAL CHIP	0	5%	1/16W	
R151	1-216-296-00	METAL CHIP	0	5%	1/8W	
R152	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R153	1-216-304-11	METAL CHIP	3.3	5%	1/10W	
R154	1-216-820-11	METAL CHIP	820	5%	1/16W	
R155	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R156	1-216-296-00	METAL CHIP	0	5%	1/8W	

Ref. No.	Part No.	Description				Remark
R158	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R160	1-216-819-11	METAL CHIP	680	5%	1/16W	
R161	1-216-809-11	METAL CHIP	100	5%	1/16W	
R164	1-216-811-11	METAL CHIP	150	5%	1/16W	
R167	1-216-820-11	METAL CHIP	820	5%	1/16W	
R168	1-216-820-11	METAL CHIP	820	5%	1/16W	
R170	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R175	1-216-810-11	METAL CHIP	120	5%	1/16W	
R177	1-216-819-11	METAL CHIP	680	5%	1/16W	
R178	1-216-817-11	METAL CHIP	470	5%	1/16W	
R179	1-216-820-11	METAL CHIP	820	5%	1/16W	
R189	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R190	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R191	1-216-864-11	METAL CHIP	0	5%	1/16W	
R192	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R193	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R194	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R196	1-216-815-11	METAL CHIP	330	5%	1/16W	
R198	1-216-817-11	METAL CHIP	470	5%	1/16W	
R200	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R201	1-216-815-11	METAL CHIP	330	5%	1/16W	
R202	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R203	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R204	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R205	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R206	1-216-813-11	METAL CHIP	220	5%	1/16W	
R208	1-216-864-11	METAL CHIP	0	5%	1/16W	
R211	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R213	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R216	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R217	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R218	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R219	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R220	1-216-811-11	METAL CHIP	150	5%	1/16W	
R221	1-216-864-11	METAL CHIP	0	5%	1/16W	
R222	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R223	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R224	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R226	1-216-819-11	METAL CHIP	680	5%	1/16W	
R228	1-216-813-11	METAL CHIP	220	5%	1/16W	
R230	1-216-807-11	METAL CHIP	68	5%	1/16W	
R231	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R232	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R238	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R242	1-216-818-11	METAL CHIP	560	5%	1/16W	
R243	1-216-809-11	METAL CHIP	100	5%	1/16W	
R244	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R245	1-216-817-11	METAL CHIP	470	5%	1/16W	
R246	1-216-817-11	METAL CHIP	470	5%	1/16W	
R247	1-216-296-00	METAL CHIP	0	5%	1/8W	

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Ref. No.	Part No.	Description				Remark
R248	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R250	1-216-810-11	METAL CHIP	120	5%	1/16W	
R251	1-216-806-11	METAL CHIP	56	5%	1/16W	
R253	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R254	1-216-818-11	METAL CHIP	560	5%	1/16W	
R255	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R256	1-216-864-11	METAL CHIP	0	5%	1/16W	
R257	1-216-818-11	METAL CHIP	560	5%	1/16W	
R258	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R259	1-216-816-11	METAL CHIP	390	5%	1/16W	
R260	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R263	1-216-864-11	METAL CHIP	0	5%	1/16W	
R266	1-216-864-11	METAL CHIP	0	5%	1/16W	
R267	1-216-864-11	METAL CHIP	0	5%	1/16W	
R270	1-216-864-11	METAL CHIP	0	5%	1/16W	
R271	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R272	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R276	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R277	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R278	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R279	1-216-818-11	METAL CHIP	560	5%	1/16W	
R280	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R281	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R282	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R283	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R285	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R286	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R290	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R291	1-216-820-11	METAL CHIP	820	5%	1/16W	
R293	1-216-807-11	METAL CHIP	68	5%	1/16W	
R294	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R295	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R297	1-216-820-11	METAL CHIP	820	5%	1/16W	
R298	1-216-820-11	METAL CHIP	820	5%	1/16W	
R299	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R300	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R301	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R302	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R303	1-216-846-11	METAL CHIP	120K	5%	1/16W	
R304	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R305	1-216-818-11	METAL CHIP	560	5%	1/16W	
R306	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R307	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R308	1-216-819-11	METAL CHIP	680	5%	1/16W	
R309	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R310	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R311	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R312	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R314	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R315	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R316	1-216-817-11	METAL CHIP	470	5%	1/16W	
R318	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R320	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R321	1-216-816-11	METAL CHIP	390	5%	1/16W	
R323	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R324	1-216-817-11	METAL CHIP	470	5%	1/16W	
R329	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R331	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R333	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R334	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R335	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R337	1-216-864-11	METAL CHIP	0	5%	1/16W	
R339	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R341	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R342	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R343	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R344	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R345	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R346	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R347	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R349	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R350	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R352	1-216-864-11	METAL CHIP	0	5%	1/16W	
R353	1-216-864-11	METAL CHIP	0	5%	1/16W	
R357	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R358	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R359	1-216-296-00	METAL CHIP	0	5%	1/8W	
R360	1-216-296-00	METAL CHIP	0	5%	1/8W	
R361	1-216-864-11	METAL CHIP	0	5%	1/16W	
R362	1-216-810-11	METAL CHIP	120	5%	1/16W	
R366	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R371	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R373	1-216-817-11	METAL CHIP	470	5%	1/16W	
R374	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R375	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R376	1-216-817-11	METAL CHIP	470	5%	1/16W	
R377	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R378	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R379	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R380	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R381	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R382	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R383	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R384	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R385	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R386	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R387	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R388	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R389	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R390	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R391	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R392	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R393	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R394	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R397	1-216-820-11	METAL CHIP	820	5%	1/16W	
R398	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R401	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R403	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R404	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R405	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R407	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R408	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R409	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R410	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R411	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R412	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R413	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R414	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R415	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R416	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R417	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R418	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R419	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R420	1-216-856-11	METAL CHIP	820K	5%	1/16W	
R421	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R422	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R423	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R424	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R425	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R426	1-216-856-11	METAL CHIP	820K	5%	1/16W	
R427	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R428	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R429	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R430	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R431	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R432	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R433	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R435	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R436	1-216-864-11	METAL CHIP	0	5%	1/16W	
R437	1-216-817-11	METAL CHIP	470	5%	1/16W	
R438	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R439	1-216-864-11	METAL CHIP	0	5%	1/16W	
R441	1-216-864-11	METAL CHIP	0	5%	1/16W	
R442	1-216-864-11	METAL CHIP	0	5%	1/16W	
R443	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R445	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R447	1-216-864-11	METAL CHIP	0	5%	1/16W	
R448	1-216-809-11	METAL CHIP	100	5%	1/16W	
R449	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R450	1-216-833-11	METAL CHIP	10K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R451	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R452	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R453	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R454	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R456	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R457	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R460	1-216-864-11	METAL CHIP	0	5%	1/16W	
R461	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R462	1-216-809-11	METAL CHIP	100	5%	1/16W	
R463	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R468	1-216-039-00	METAL CHIP	390	5%	1/10W	
R469	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R470	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R471	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R472	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R473	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R474	1-217-671-11	METAL CHIP	1	5%	1/10W	
R475	1-217-671-11	METAL CHIP	1	5%	1/10W	
R476	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R479	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R480	1-217-671-11	METAL CHIP	1	5%	1/10W	
R481	1-217-671-11	METAL CHIP	1	5%	1/10W	
R484	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R485	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R487	1-216-864-11	METAL CHIP	0	5%	1/16W	
R489	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R490	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R491	1-216-296-00	METAL CHIP	0	5%	1/8W	
R492	1-216-864-11	METAL CHIP	0	5%	1/16W	
R493	1-216-864-11	METAL CHIP	0	5%	1/16W	

〈 THERMISTOR 〉

Ref. No.	Part No.	Description	Remark
R073	1-809-358-21	THERMISTOR, NTC (2125) 500	
R113	1-809-358-21	THERMISTOR, NTC (2125) 500	

〈 NETWORK, RES 〉

Ref. No.	Part No.	Description	Remark
RB401	1-236-442-11	NETWORK, RES 330K	
RB402	1-236-907-11	NETWORK, RES (CHIP TYPE) 100K	
RB403	1-236-907-11	NETWORK, RES (CHIP TYPE) 100K	
RB404	1-236-908-11	NETWORK, RES (CHIP TYPE) 10K	
RB405	1-236-436-11	NETWORK, RES 100K	
RB406	1-236-908-11	NETWORK, RES (CHIP TYPE) 10K	
RB407	1-236-907-11	NETWORK, RES (CHIP TYPE) 100K	
RB408	1-236-908-11	NETWORK, RES (CHIP TYPE) 10K	
RB409	1-236-904-11	NETWORK, RES (CHIP TYPE) 1.0K	
RB410	1-236-412-11	NETWORK, RES 1.0K	
RB411	1-236-424-11	NETWORK, RES 10K	
RB414	1-236-904-11	NETWORK, RES (CHIP TYPE) 1.0K	
RB416	1-236-412-11	NETWORK, RES 1.0K	
RB418	1-236-408-11	NETWORK, RES 470	

Ref. No.	Part No.	Description	Remark
RB419	1-236-412-11	NETWORK, RES 1.0K	
RB420	1-236-904-11	NETWORK, RES (CHIP TYPE) 1.0K	
RB421	1-236-908-11	NETWORK, RES (CHIP TYPE) 10K	
RB422	1-236-424-11	NETWORK, RES 10K	
RB423	1-236-424-11	NETWORK, RES 10K	
RB424	1-236-424-11	NETWORK, RES 10K	
RB425	1-236-424-11	NETWORK, RES 10K	
RB426	1-236-412-11	NETWORK, RES 1.0K	
		(VARIABLE RESISTOR)	
RV151	1-238-087-11	RES, ADJ, CERMET 1K	
		(FLEXIBLE BOARD)	
W001	1-696-489-11	FP-588 FLEXIBLE BOARD	
W405	1-644-285-11	FP-572 FLEXIBLE BOARD	
		(CRYSTAL)	
X151	1-579-366-11	VIBRATOR, CRYSTAL (4.43MHz)	
X401	1-579-063-21	VIBRATOR, CERAMIC (4.19MHz)	
X402	1-579-049-21	VIBRATOR, CRYSTAL (32kHz)	
X403	1-579-368-31	VIBRATOR, CRYSTAL (11.719MHz)	
X404	1-579-551-11	VIBRATOR, CERAMIC (700kHz)	

****

MISCELLANEOUS
****

Ref. No.	Part No.	Description	Remark
14	1-696-487-11	CABLE, FLAT (FFC-90)	
18	A-7091-800-A	MICROPHONE UNIT	
80	1-692-257-11	SWITCH, PUSH (ZOOM)	
106	1-547-558-21	FILTER BLOCK, OPTICAL	
108	1-547-548-11	LENS, ZOOM (VCL-6210WC)	
401	1-547-548-11	LENS, ZOOM (VCL-6210WC)	
IC875	A-7030-369-A	CCD BLOCK ASSY (AUTO) (ICX055AK-2) (CCD IMAGER)	
H516	1-550-104-32	HOLDER, BATTERY	
M901	A-7048-585-A	DRUM ASSY (DGH-90A-R)	
M902	8-835-477-01	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM (LOADING)	
M904	3-708-494-01	METER ASSY, IG (IRIS)	
M905	3-708-491-01	MOTOR ASSY, STEPPING (FOCUS)	
M906	3-708-492-01	MOTOR ASSY, PZ (ZOOM)	
⚠PS901	1-532-841-21	LINK, IC 1.6A/90V	
⚠PS902	1-532-841-21	LINK, IC 1.6A/90V	
S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
S002	1-572-987-11	SWITCH, PUSH (3 KEY)	
S005	1-570-771-21	SWITCH (C DOWN)	
V901	1-452-565-11	CRT ASSY	
⚠W501	1-540-019-21	SOCKET ASSY, CRT	
W517	1-696-482-11	CABLE, FLAT (FFC-85)	
W519	1-696-488-11	CABLE, FLAT (FFC-92)	
W971	1-696-484-11	CABLE, FLAT (FFC-87)	
W991	1-696-483-11	CABLE, FLAT (FFC-86)	

****

ACCESSORIES & PACKING MATERIALS
****

Ref. No.	Part No.	Description	Remark
	A-6768-254-A	RFU ADAPTOR (RFU-90E) (AEP)	
	A-6767-707-A	RFU ADAPTOR (RFU-89EA) (UK)	
	A-6767-706-A	RFU ADAPTOR (RFU-89EA) (E)	
	A-6768-255-A	RFU ADAPTOR (RFU-90AS) (Australian)	
	1-465-927-81	REMOTE COMMANDER (CAM CORDER) (RMT-507)	
	1-571-164-11	SWITCH, ANTENNA CHANGE (CABLE) (UK, E)	
	3-712-673-01	SCREWDRIVER (UK, E)	
	3-738-517-01	BELT (S), SHOULDER	
*	3-754-318-01	INSTRUCTION	
	3-755-493-41	MANUAL, INSTRUCTION (ENGLISH) (AEP, UK)	
	3-755-493-51	MANUAL, INSTRUCTION (FRENCH, GERMAN, SPANISH) (AEP)	
	3-755-493-61	MANUAL, INSTRUCTION (DUTCH, SWEDISH, ITALIAN) (AEP)	
	3-755-774-61	MANUAL, INSTRUCTION (ENGLISH) (E, Australian)	
	3-755-774-71	MANUAL, INSTRUCTION (FRENCH, GERMAN, SPANISH) (E)	
	3-755-774-81	MANUAL, INSTRUCTION (ARABIC) (E)	
	3-755-774-91	MANUAL, INSTRUCTION (CHINESE) (E)	
	3-755-493-71	MANUAL, INSTRUCTION (PORTUGUESE) (AEP)	
	3-755-493-81	MANUAL, INSTRUCTION (DANISH, FINNISH) (AEP)	
	3-756-122-11	INSTRUCTION (CARRYING CASE) (TR303EP)	
	3-941-737-01	BELT, SHOULDER	
	3-943-154-11	HOLDER (B), REMOTE CONTROL	
*	3-949-004-01	CUSHION, ACC (TR303E)	
*	3-949-005-01	CUSHION (LOWER) (TR303E)	
*	3-949-006-11	INDIVIDUAL CARTON (TR303E)	
*	3-950-790-01	CASE, CARRYING, SOFT (TR303EP)	
*	3-950-791-01	CUSHION (FRONT), INNER (TR303EP)	
*	3-950-792-01	CUSHION (REAR), INNER (TR303EP)	
*	3-950-793-01	SPACER (TR303EP)	
*	3-950-794-01	PLATE, INNER (TR303EP)	
*	3-950-795-11	INDIVIDUAL CARTON (TR303EP)	
*	3-952-142-01	BELT, CARRYING (TR303EP)	
*	3-952-143-01	CASE (LOWER) CARRYING, SOFT (TR303EP)	
**	AC-V35	AC POWER ADAPTOR	
***	NP-55	BATTERY PACK	

Note
** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.
*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

****

HARDWARE LIST
****

Ref. No.	Part No.	Description	Remark
#1	7-627-853-57	PRECISION SCREW +2X5	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SECTION 7
CAMERA SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 198.

7-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

7-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Stabilized power supply
- Color monitor
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Part Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	Max gain adjustment (2 used) White balance check
	ND filter 0.4	J-6080-806-A	Max gain adjustment
	ND filter 0.3	J-6080-818-A	White balance adjustment
	ND filter 0.1	J-6080-807-A	Max gain adjustment
J-3	Pattern box PTB-500	J-6029-140-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote control unit (RM-95-remodeled in part)[Note 1]	J-6082-053-B	
J-6	Extension cord (10P, 1 mm)	J-6082-064-A	For extension of JK-91 board
J-7	Extension cord (20P, 0.8 mm)	J-6082-196-A	For extension of CN-65 board (Cabinet (R)) (For the video and the camera section adjustment)
			For extension of AU-138 board (During the repair of AU-138 board)
J-8	Extension cord (16P, 0.8 mm)	J-6082-136-A	For the extension of the lens block (During the repair of the camera section)
J-9	Relay board (21P, 0.5 mm)[Note 2]	J-6082-176-A	For the extension of the lens block (During the repair of the camera section)
J-10	Measuring pin for camera section	J-6082-139-A	For the camera section adjustment
J-11	Extension cord (42P, 0.8 mm)	J-6082-195-A	For the extension of DD-48 board (During the repair of the video section)
J-12	Siemens star	J-6080-875-A	For flange back check
J-13	Extension cord (20P, 0.5 mm)[Note 2]	J-6082-138-A	For extension between the lens block (FPC) and VC-122 board (CN851) (During the repair of the camera section)
J-14	Extension board (30P, 0.8 mm)	J-6082-167-A	For the extension of VS-95 board (For the mecha deck check)

Note 1: If the micro processor IC in the adjusting remote control unit is not the new micro processor (UPD7503G-C56-12), the switchover of the page cannot be carried out. In this case, replace with the new micro processor (8-759-148-35).

Note 2: The extension code (J-6082-138-A) is also attached with a 21P, 0.5 mm code. Connect this code to the relay board (J-6082-176-A) for extensions between the lens block (FPC) and VC-122 board (CN851).

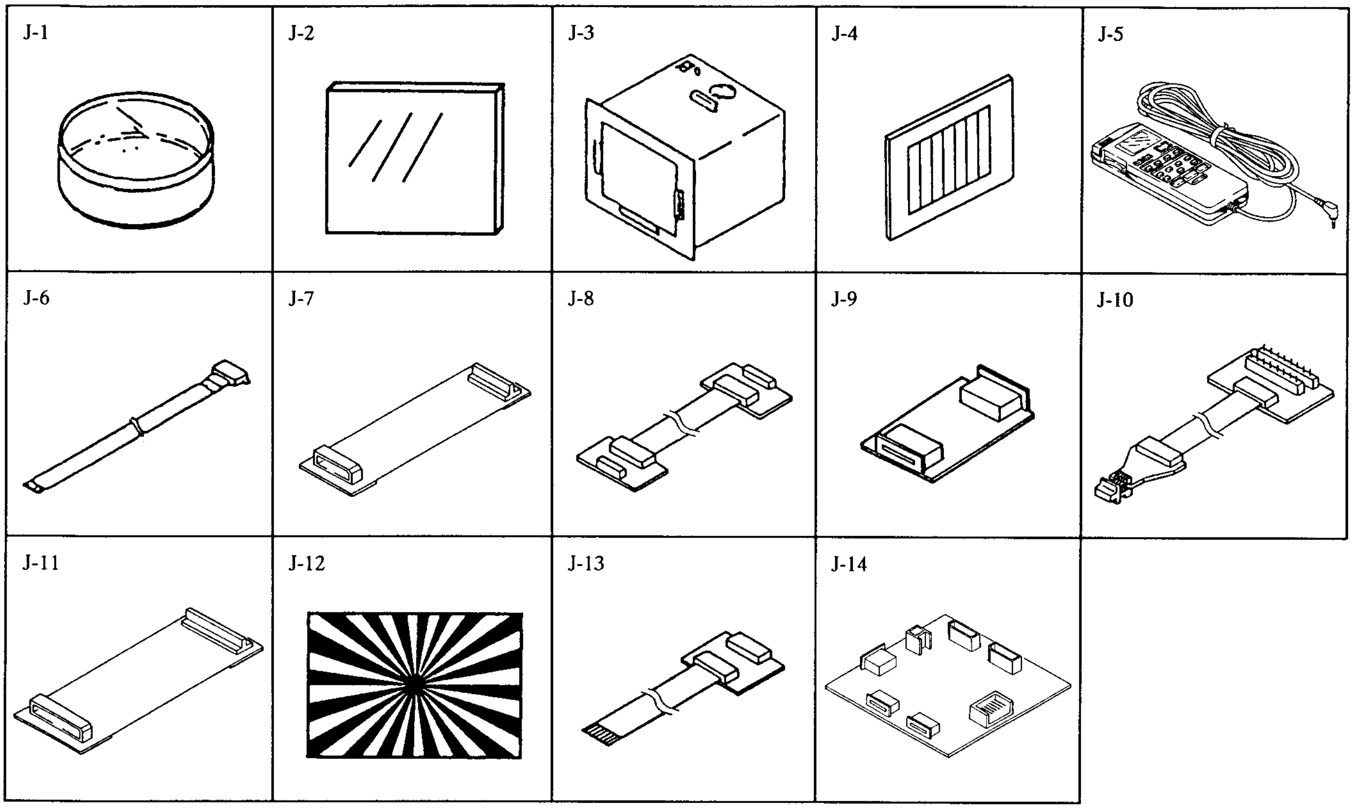

J-1
J-2
J-3
J-4
J-5
J-6
J-7
J-8
J-9
J-10
J-11
J-12
J-13
J-14

Fig. 7-1.

7-1-2. Preparations

Note: For further details on how to remove the cabinet and each board, refer to "1. Disassembly".

1) Connect the equipments for adjustment as shown in Fig. 7-3.
2) The EVF (Electronic viewfinder) is required for checking the white balance mode and shutter speeds. If the EVF is not required, remove the VS-95 board CN102.

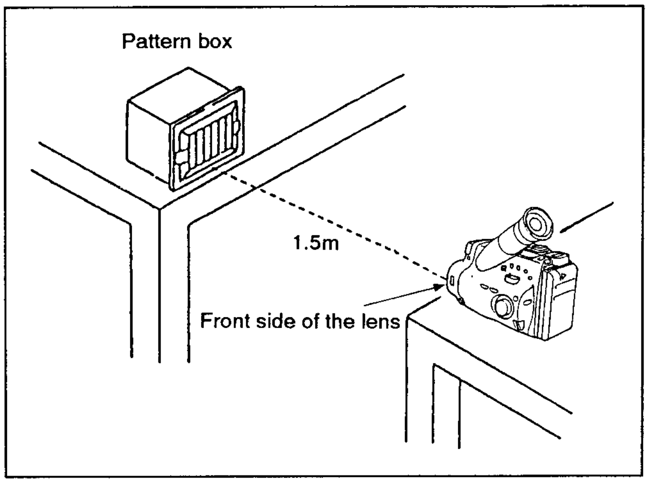

Pattern box
1.5m
Front side of the lens

Fig. 7-2.

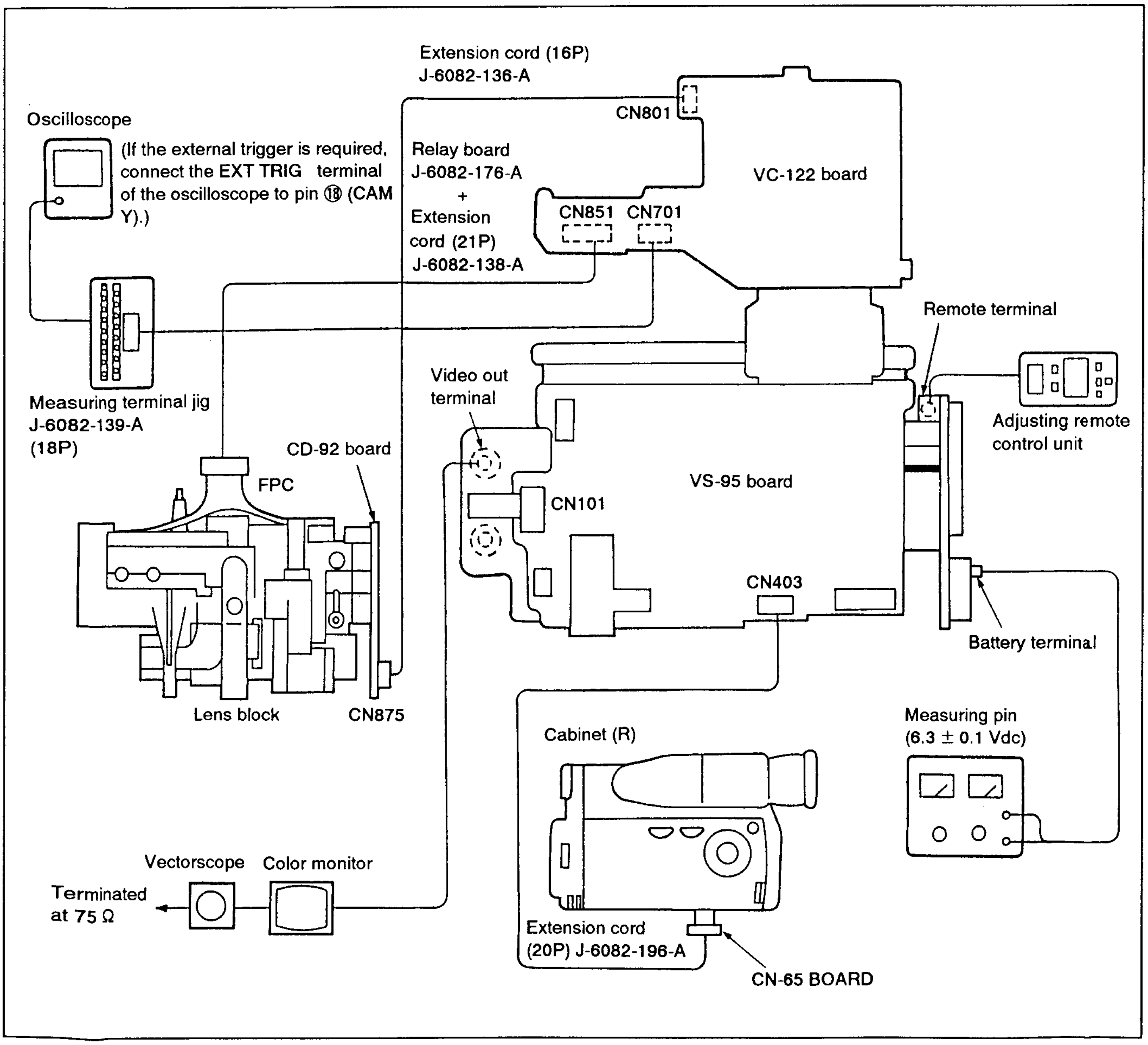

Extension cord (16P)
J-6082-136-A
Oscilloscope
(If the external trigger is required, connect the EXT TRIG terminal of the oscilloscope to pin ⑱ (CAM Y).)
CN801
Relay board
J-6082-176-A
+
Extension
cord (21P)
J-6082-138-A
VC-122 board
CN851
CN701
Remote terminal
Measuring terminal jig
J-6082-139-A
(18P)
Video out
terminal
Adjusting remote
control unit
CD-92 board
FPC
VS-95 board
CN101
CN403
Battery terminal
Lens block
CN875
Measuring pin
(6.3 ± 0.1 Vdc)
Cabinet (R)
Vectorscope
Color monitor
Terminated
at 75 Ω
Extension cord
(20P) J-6082-196-A
CN-65 BOARD

Fig. 7-3.

7-1-3. Precautions

1. Switch settings

Adjust the switches to the following positions, and perform the adjustments without inserting the tape, unless specified otherwise.

1. Camera/player power switch (VK-27 board S977)····Camera
2. Standby switch (SW-205 board S519)·················· Standby
3. LENS OPEN switch (MF-191 board S973) ············· OPEN
4. FOCUS button (MF-191 board S971) ···············MANUAL
5. PROGRAM AE selector (CF-32 board S997) ·····NORMAL

2. Adjustment Procedure

Perform in the given order as a rule.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the display frame as shown in Fig. 7-4. if adjustments are performed using the color bar chart.
   (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and adjust the zoom lever so that the white pattern becomes the same size and is in the same position as the color bar chart (Standard picture frame).

Color bar chart standard picture frame

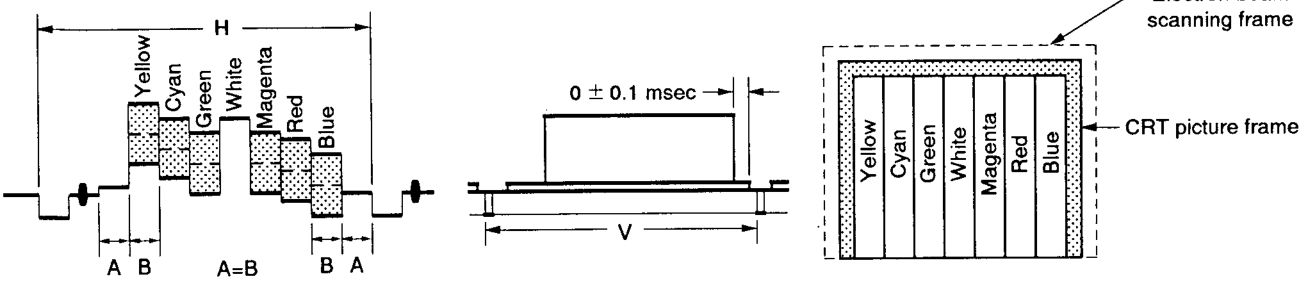

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
0 ± 0.1 msec
V
Electron beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. a (Video input/output terminal output waveform)

Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-4.

3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm× 841 mm) paper to a black one, and make the chart shown in Fig. 7-5.

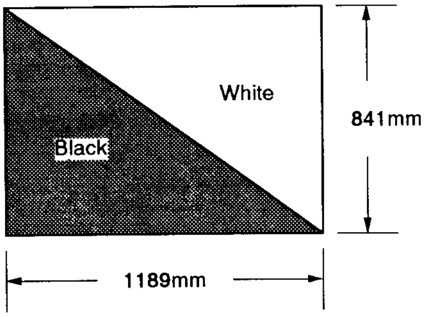

White
Black
841mm
1189mm

Fig. 7-5.

Note: Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

7-1-4. Adjusting Remote Control Unit

The camera section is adjusted by changing the constant using the coefficient of the digital signal processing calculation, or modifying the output voltage of EVR IC (VC-122 board IC702). These processes are carried out by the camera micro processor (VC-122 board IC709). This micro processor reads the data written in the non-volatile memory (VC-122 board IC712), and transmits it to the digital signal processing circuit and EVR.

The adjusting remote control unit is used for rewriting the adjustment data written in the non-volatile memory necessary for performing the adjustments.

The adjusting remote control unit uses the remote control signal line (LANC) to correspond mutually with the camera micro processor. The page, address and the up/down command of the data can be transmitted from the remote control unit to the camera micro processor. On the other hand, the page, address, and data can also be transmitted the other way round.

1. Using the adjusting remote control unit

1) Connect the adjusting remote control unit to the remote terminal (DD-48 board J902).
2) Adjust the HOLD switch of the adjusting remote control unit to HOLD (SERVICE position).
   If it has been properly connected, the LCD on the adjusting remote control unit will show the display in Fig. 7-6.

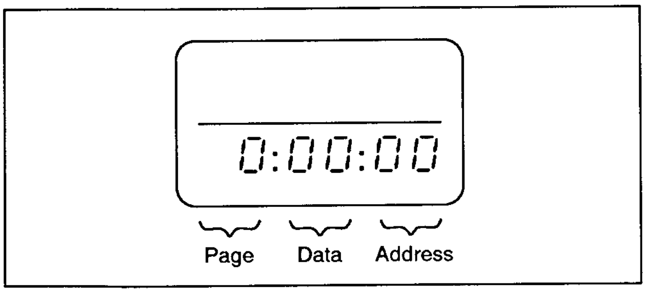


Fig. 7-6.

3) Operate the adjusting remote control unit as follows.
   - Changing the page
     The page will increase when the EDIT SEARCH+ button is pressed. It will decrease when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Display on LCD	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 7-1.

   - Changing the address
     The address will increase when the FF (▸▸) button is pressed, and decrease when the REW (◂◂) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data will increase when the PLAY (▶) button is pressed, and decrease when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     It is necessary to press the PAUSE button to write the adjustment data (F page, D page) in the non-volatile memory.
     (The new adjustment data will not be recorded in the non-volatile memory if this operation is not performed.)
4) Select page: 6, address: 00, and adjust the data to 01. This releases the write protect of page F, and the camera section (F page) can be adjusted.
5) After completing all adjustments, turn off the main power (6.3V) once. This can release the adjustment mode (other than page F).

2. Precautions upon using the adjusting remote control unit

The correct adjustment data may be erased at times, due to operation errors of the adjusting remote control unit. To prevent this from occurring, it is recommended that all adjustment data be recorded in the memory before beginning adjustments, and the new adjustment data be recorded in the memory after each adjustment.

7-1-5. Page F Address List

Note 1: The data listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are the values after performing "Page F Data Initialization" and "Page F Data Modification". They are different from the value after performing all the adjustments.

Address	Name	Function [ ] indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
00	ID	Set ID	3E	3E
01	FADER LEVEL	AE REF level modification during fader	E0	E0
02	FADER ENDTIM	The setting of the AE REF modulation time during fader	10	10
03	CS SL	Carrier balance adjustment	35	
04	VSUB	CCD imager V SUB adjustment [IC702 ③]	80	
05	VPGH	CCD imager VRG adjustment [IC702 ④]	80	
06	VREF Y	Camera core Y D/A standard voltage, SYNC level adjustment [IC702 ⑤]	7B	
07	VREF C	Camera core CHROMA D/A standard voltage, BURST level adjustment [IC702 ⑥]	99	
08	HALL GAIN	Hole amplifier gain adjustment [IC702 ⑦] } HALL adjustment	47	
09	HALL OFFSET	Hole amplifier offset adjustment [IC702 ⑧]	71	
0A	LOWLIGHT CS	Low luminance intensity REF level modulation start setting	C0	C0
0B	REF 2V	2V standard voltage for hole element [IC702 ⑫]	68	68
0C	AD REF	Black level setting during A/D conversion, A/D off set adjustment [IC702 ⑬]	72	
0D	CORE DETH	CCD correction control	04	04
0E	CORE VTR DELAY	1HDL longitudinal setting during VTR playback	16	16
0F	CORE APCN4	Horizontal aperture setting	35	35
10	CORE APCN5	Vertical aperture setting	3D	3D
11	CORE EFECT	Special effect control	A0	A0
12	CORE MATR	BLUE matrix constant	24	24
13	CORE MATB	RED matrix constant	6C	6C
14	CORE BURST LEVEL	Burst flag level setting, color modulation ON/OFF Data | Adjustment modeAdjustment 2E | Color modulation stopped 38 | Normal level	38	38
15	CORE CHROMA DLY	Y/C delay adjustment	02	02
16	CORE Y SETUP	Set up level setting	06	06
17	CORE VHAPCN	Slice and level setting of the aperture signal	17	17
18	CORE B-Y GAIN	B-Y GAIN } Color reproduction adjustments	13	
19	CORE R-Y GAIN	R-Y GAIN	11	
1A	CORE R-Y HUE	R-Y HUE	FF	
1B	CORE B-Y HUE	B-Y HUE	FD	
1C	CS/APCCUT	Low luminance intensity aperture and chroma suppress level	22	22

Table 7-2 (1).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal		Adjustment data	
				Initial value	Memo column
1D	NEXT LINE DEFECT BIT	CCD correction pattern	CCD imager correction data write	00	
1E	CCD DEFECT0	CCD correction data		00	
1F	CCD DEFECT1	CCD correction data		00	
20	CCD DEFECT2	CCD correction data		00	
21	CCD DEFECT3	CCD correction data		00	
22	CCD DEFECT4	CCD correction data		00	
23	CCD DEFECT5	CCD correction data		00	
24	CCD DEFECT6	CCD correction data		00	
25	CCD DEFECT7	CCD correction data		00	
26	CCD DEFECT8	CCD correction data		00	
27	CCD DEFECT9	CCD correction data		00	
28	CCD DEFECT10	CCD correction data		00	
29	CCD DEFECT11	CCD correction data		00	
2A	CCD DEFECT12	CCD correction data		00	
2B	CCD DEFECT13	CCD correction data		00	
2C	CCD DEFECT14	CCD correction data		00	
2D	RREF L	3200k Red standard data LSB	Auto white balance preset adjustment	72	
2E	RREF H	3200k Red standard data MSB		5F	
2F	GREF L	3200k Green standard data LSB		D4	
30	GREF H	3200k Green standard data MSB		63	
31	BREF L	3200k Blue standard data LSB		3B	
32	BREF H	3200k Blue standard data MSB		2C	
33	RCONTREF	3200k RCONT adjustment value	Pre-white balance adjustment	42	
34	BCONTREF	3200k BCONT adjustment value		4A	
35	AWB NOWM R	Red regular correction coefficient	Auto white balance adjustment	7E	
36	AWB NORM B	Blue regular correction coefficient		96	
37	AWB SHUT IN	Indoor determination shutter data		A8	A8
38	ABW SHUT OUT	Outdoor determination shutter data		A0	A0
39	AWB IRIS IN	Indoor determination hole data	IRIS IN/OUT adjustment	79	
3A	AWB IRIS OUT	Outdoor determination hole data		7F	
3B	AWB G LEVEL	High luminance section green integral level		02	02
3C	AWB G WIDTH	High luminance section green integral level range		03	03
3D	DMAT HUE	Variable linear matrix HUE coefficient	Linear matrix adjustment	00	
3E	DMAT GAIN	Variable linear matrix GAIN coefficient		00	
3F	AWB SELECT	AWB mode selection		00	00
40	AWB DIFF	Standard difference from the outdoor fixed value		0A	0A
41	AWB BOTTOM SLP R	AWB incoming frame bottom R coefficient		48	48
42	AWB BOTTOM SLP B	AWB incoming frame bottom B coefficient		78	78
43	AWB MIDDLE SLP R	AWB incoming frame middle R coefficient		60	60
44	AWB MIDDLE SLP B	AWB incoming frame middle B coefficient		40	40
45	AWB TOP SLP R	AWB incoming frame top R coefficient		66	66
46	AWB TOP SLP B	AWB incoming frame top B coefficient		18	18

Table 7-2 (2).

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function
[ ] Indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>47</td><td>AWB KEIKO R</td><td>AWB incoming frame fluorescent light R coefficient</td><td>66</td><td>66</td></tr>
<tr><td>48</td><td>AWB KEIKO B</td><td>AWB incoming frame fluorescent light B coefficient</td><td>18</td><td>18</td></tr>
<tr><td>49</td><td>AWB BOTTOM UP</td><td>AWB incoming frame bottom upper value</td><td>C2</td><td>C2</td></tr>
<tr><td>4A</td><td>AWB BOTTOM DWN</td><td>AWB incoming frame bottom lower value</td><td>8C</td><td>8C</td></tr>
<tr><td>4B</td><td>AWB MIDDLE UP</td><td>AWB incoming frame middle upper value</td><td>AD</td><td>AD</td></tr>
<tr><td>4C</td><td>AWB MIDDLE DWN</td><td>AWB incoming frame middle lower value</td><td>96</td><td>96</td></tr>
<tr><td>4D</td><td>AWB TOP UP</td><td>AWB incoming frame top upper value</td><td>78</td><td>78</td></tr>
<tr><td>4E</td><td>AWB TOP DWN</td><td>AWB incoming frame top lower value</td><td>60</td><td>60</td></tr>
<tr><td>4F</td><td>AWB KEIKO</td><td>AWB incoming frame fluorescent light output lower value</td><td>66</td><td>66</td></tr>
<tr><td>50</td><td>AWB KEIKO DWN</td><td>AWB incoming frame fluorescent light lower value</td><td>59</td><td>59</td></tr>
<tr><td>51</td><td>AWB R TOP LMT</td><td>AWB incoming frame Rcont upper value</td><td>6E</td><td>6E</td></tr>
<tr><td>52</td><td>AWB R DWN LMT</td><td>AWB incoming frame Rcont lower value</td><td>20</td><td>20</td></tr>
<tr><td>53</td><td>AWB B TOP LMT</td><td>AWB incoming frame Bcont upper value</td><td>83</td><td>83</td></tr>
<tr><td>54</td><td>AWB B IN TOP</td><td>AWB incoming frame Bcont</td><td>67</td><td>67</td></tr>
<tr><td>55</td><td>AWB B IN MAX</td><td>AWB incoming frame Bcont</td><td>5C</td><td>5C</td></tr>
<tr><td>56</td><td>AWB B OUT MIN</td><td>AWB incoming frame Bcont</td><td>5C</td><td>5C</td></tr>
<tr><td>57</td><td>AWB B OUT DWN</td><td>AWB incoming frame Bcont</td><td>4A</td><td>4A</td></tr>
<tr><td>58</td><td>AWB B DWN LMT</td><td>AWB incoming frame Bcont lower value</td><td>1B</td><td>1B</td></tr>
<tr><td>59</td><td>AWB LL LMT</td><td>Low luminance intensity limiter</td><td>06</td><td>06</td></tr>
<tr><td>5A</td><td>AWB T M DIVID</td><td>AWB incoming frame upper, middle border value</td><td>5E</td><td>5E</td></tr>
<tr><td>5B</td><td>AWB B M DIVID</td><td>AWB incoming frame middle, lower border value</td><td>39</td><td>39</td></tr>
<tr><td>5C</td><td>AWB DELAY TM</td><td>AWB tracking speed
<table>
<tr><th>Data</th><th>Adjustment mode</th></tr>
<tr><td>01</td><td>High speed tracking mode</td></tr>
<tr><td>0C</td><td>Normal</td></tr>
</table></td><td>0C</td><td>0C</td></tr>
<tr><td>5D</td><td>AWB FAST TM</td><td>AWB initial high speed tracking amount</td><td>40</td><td>40</td></tr>
<tr><td>5E</td><td>AWB OUT HYS OFF</td><td>AWB outdoor hysteresis off difference</td><td>0C</td><td>0C</td></tr>
<tr><td>5F</td><td>AWB OUT B HYS</td><td>AWB outdoor hysteresis amount</td><td>06</td><td>06</td></tr>
<tr><td>60</td><td>AWB MODE</td><td>AWB adjustment mode
<table>
<tr><th>Data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Normal</td></tr>
<tr><td>D0</td><td>AWB adjustment mode</td></tr>
<tr><td>F1</td><td>All area tracking mode</td></tr>
</table></td><td>00</td><td>00</td></tr>
<tr><td>61</td><td>AE REFL</td><td>Reference value (lower) for AE</td><td>00</td><td>00</td></tr>
<tr><td>62</td><td>AE REFH</td><td>Reference value (upper) for AE</td><td>1E</td><td>1E</td></tr>
<tr><td>63</td><td>AGC MIN</td><td>AGC MIN value (AGCREF value), IRIS level adjustment</td><td>E3</td><td></td></tr>
<tr><td>64</td><td>AE MIML</td><td>Low luminance intensity side limiter (MAXGAIN), MAX GAIN adjustment</td><td>32</td><td></td></tr>
<tr><td>65</td><td>AE MAXL</td><td>High luminance intensity side limiter (lower)</td><td>80</td><td>80</td></tr>
<tr><td>66</td><td>IRIS OFFSET</td><td>Iris ROM table OPEN side off set</td><td>D0</td><td>D0</td></tr>
<tr><td>67</td><td>AE KEISU</td><td>Correction coefficient during detection weighting</td><td>00</td><td>00</td></tr>
<tr><td>68</td><td>AE FUNCTION</td><td>SW for turning each AE function ON and OFF</td><td>02</td><td>02</td></tr>
</table>

Table 7-2 (3).

Address	Name	Function [ ] indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
69	BL HOSEIH	Forcible back light level setting (upper)	40	40
6A	JITEISU DOWN	Constant during loop response DOWN side	28	28
6B	JITEISU UP	Constant during loop response UP side	0D	0D
6C	AE KNEE	KNEE setting value for AE	FF	FF
6D	ORETEN SET	Variable point due to time constant error amount	13	13
6E	OMOMIOUT	Outer frame weighting amount	40	40
6F	AFC WIDE	Coefficient required for the ANF integral loop	03	03
70	AFC GAIN	Loop gain of the flickerless loop	01	01
71	AFC LIMIL	Limiter corresponding to the error rate (Lower)	60	60
72	HIST P KEISU	Histocomp level setting P for counter light determination	20	20
73	HIST H KEISU	Histocomp level setting H for counter light determination	E0	E0
74	HIST L KEISU	Histocomp level setting L for counter light determination	90	90
75	GYAKOU JITEISU	Constant during auto back light response	08	08
76	SABUN LIMIT	Limiter for counter light determination	40	40
77	FUZZY RULE1	Correction amount 1 for auto back light	A0	A0
78	FUZZY RULE2	Correction amount 2 for auto back light	D0	D0
79	FUZZY RULE3	Correction amount 3 for auto back light	E0	E0
7A	FUZZY RULE4	Correction amount 4 for auto back light	B0	B0
7B	FUZZY RULE5	Correction amount 5 for auto back light	70	70
7C	FUZZY RULE6	Correction amount 6 for auto back light	90	90
7D	FUZZY RULE7	Correction amount 7 for auto back light	B0	B0
7E	FUZZY RULE8	Correction amount 8 for auto back light	B8	B8
7F	FUZZY RULE9	Correction amount 9 for auto back light	98	98
80	FUZZY RULE10	Correction amount 10 for auto back light	78	78
81	IRIS MIN L	Iris limit value (lower)	42	42
82	IRIS MIN H	Iris limit value (upper)	02	02
83	DELTA SHUT GAIN	Shutter smoothing value setting	04	04
84	AE WAKUH	Frame data for AE detection (vertical line)	0F	0F
85	AE WAKUV	Frame data for AE detection (horizontal line)	4F	4F
86	WIDE LIMIT	ZOOM limiter WIDE (lower) } Flange back adjustment	DE	
87	WIDE LIMITH	ZOOM limiter WIDE (upper)	02	
88	TELE LIMIT	ZOOM limiter TELE (lower)	22	
89	TELE LIMITH	ZOOM limiter TELE (upper)	1D	
8A	STEP ZERO	Flange back value	90	
8B	STEP ZERO SPAN	Frange back value 2	A0	
8C	ZOOM SPD FAST	Zoom speed (fast)	73	73
8D	ZOOM SPD SUPER	Zoom speed (For adjustment)	6A	6A
8E	ZS INIT SLOW	Zoom speed initial value (slow)	6A	6A
8F	ZS INIT FAST	Zoom speed initial value (fast)	6A	6A
90	ZMSPD DAMIN	Zoom speed D/A MIN value	3D	3D
91	ZS K	Zoom servo coefficient K	11	11
92	ZS L	Zoom servo coefficient L	04	04

Table 7-2 (4).

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function
[ ] Indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>93</td><td>ZP HYS</td><td>Zoom potential hysteresis</td><td>03</td><td>03</td></tr>
<tr><td>94</td><td>ZOOM SPD SLOW</td><td>Zoom speed (slow)</td><td>29</td><td>29</td></tr>
<tr><td>95</td><td>AF MD2THL</td><td>MODE2 THR</td><td>20</td><td>20</td></tr>
<tr><td>96</td><td>MAXCHG THR</td><td>MAX value renewal THR</td><td>1A</td><td>1A</td></tr>
<tr><td>97</td><td>ERR THRL</td><td>Wobbling width THR</td><td>18</td><td>18</td></tr>
<tr><td>98</td><td>WOB INTV</td><td>Wobbling second interval</td><td>04</td><td>04</td></tr>
<tr><td>99</td><td>ERRPOL THR</td><td>MODE2 error possible THR</td><td>13</td><td>13</td></tr>
<tr><td>9A</td><td>MAXCHK THR</td><td>MAX CHECK THR</td><td>12</td><td>12</td></tr>
<tr><td>9B</td><td>REWOB THR</td><td>Wobbling second THR</td><td>0A</td><td>0A</td></tr>
<tr><td>9C</td><td>MODE2 INOUT</td><td>MODE2 speed switchover</td><td>8B</td><td>8B</td></tr>
<tr><td>9D</td><td>SMLWD THR</td><td>Small frame THR</td><td>0A</td><td>0A</td></tr>
<tr><td>9E</td><td>ZOOM PULSE LIMIT</td><td>Maximum zoom pulse value</td><td>EE</td><td>EE</td></tr>
<tr><td>9F</td><td>ZOOM RIZE</td><td>Zoom rise minimum speed time</td><td>0A</td><td>0A</td></tr>
<tr><td>A0</td><td>FB CURVEPEAKL</td><td>Constant for flange back adjustment</td><td>F5</td><td>F5</td></tr>
<tr><td>A1</td><td>FB CURVEPEAKH</td><td>Constant for flange back adjustment</td><td>0B</td><td>0B</td></tr>
<tr><td>A2</td><td>FB ZOOMSL</td><td>Constant for flange back adjustment</td><td>02</td><td>02</td></tr>
<tr><td>A3</td><td>FB ZOOMSH</td><td>Constant for flange back adjustment</td><td>07</td><td>07</td></tr>
<tr><td>A4</td><td>LIMITREST WIDE</td><td>Zoom limiter WIDE side</td><td>14</td><td>14</td></tr>
<tr><td>A5</td><td>LIMITREST TELE</td><td>Zoom limiter TELE side</td><td>17</td><td>17</td></tr>
<tr><td>A6</td><td>FB PEAKTHR</td><td>Constant for flange back adjustment</td><td>FF</td><td>FF</td></tr>
<tr><td>A7</td><td>FB ZOOM SLOW</td><td>Constant for flange back adjustment</td><td>1C</td><td>1C</td></tr>
<tr><td>A8</td><td>DET IRIS ALT</td><td>Iris variation check THR</td><td>02</td><td>02</td></tr>
<tr><td>A9</td><td>DET AGC ALT</td><td>AGC variation check THR</td><td>02</td><td>02</td></tr>
<tr><td>AA</td><td>LIMIT INSURANCE</td><td>Focus limiter insurance value</td><td>02</td><td>02</td></tr>
<tr><td>AB</td><td>FOCUS MODE</td><td>Focus mode<table><tr><th>Data</th><th>Adjustment mode</th></tr><tr><td>08</td><td>Zoom, Focus fixed</td></tr><tr><td>00</td><td>Normal</td></tr></table></td><td>00</td><td>00</td></tr>
<tr><td>AC</td><td>LENS ADJ MODE</td><td>Flange back adjustment mode<table><tr><th>Data</th><th>Adjustment mode</th></tr><tr><td>00</td><td>Nomal</td></tr><tr><td>01</td><td>Flange back adjustment</td></tr></table></td><td>00</td><td>00</td></tr>
<tr><td>AD</td><td>LENS EMRG</td><td>Lens emergency</td><td>00</td><td>00</td></tr>
<tr><td>AE</td><td>NTSC PAL/H DEF DELAY</td><td>DELAY bit=0: NTSC, 1: PAL, bit4-7=CCD correction delay</td><td>21</td><td>21</td></tr>
<tr><td>AF</td><td>FT SW</td><td>DDS display mode switchover<table><tr><th>Data</th><th>DDS display mode</th></tr><tr><td>00</td><td>Y sampling display</td></tr><tr><td>02</td><td>R-Y display</td></tr><tr><td>40</td><td>HALL data display</td></tr><tr><td>82</td><td>R ratio display</td></tr><tr><td>83</td><td>B ratio display</td></tr><tr><td>91</td><td>R, B ratio (M) display</td></tr><tr><td>B0</td><td>Focus step display</td></tr></table></td><td>00</td><td>00</td></tr>
</table>

Table 7-2 (5).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
B0	CORE OTHER	CORE MODE DATA 13 byte	10	10
B1	CORE Y GAIN	CORE FIELD DATA 0 byte	3A	3A
B2	E LOW LIGHT START	Low light chroma suppress start point	30	30
B3				
B4	YAKEI LEVEL	YAKEI mode gain setting value	40	40
B5				
B6	ZOOM DROP 1	F-No. dropping (1) by Zoom lens	60	60
B7	ZOOM DROP 2	F-No. dropping (2) by Zoom lens	75	75
B8				
B9				
BA	AWB IN B HYS	Hysteresis of AWB indoor BLUE	04	04
BB	AWB IN R HYS	Hysteresis of AWB indoor RED	02	02
BC	AWB KAKE NORM R	ADD: 35 NORM R × 1000H	20	20
BD	AWB KAKE NORM B	ADD: 36 NORM B × 1000H	20	20
BE	MF STEP CHNGE	Coefficent of MODE 2 THR	46	46
BF	MD2 LOWCON SPD	Speed for Low-contrast at MODE 2	07	07
C0	MAX CHECK NG CNT	MAX CHECK NG count	14	14
C1	AF CONTROL FLAG		0E	0E
C2	AE Y THR	Low light AE fluctuation THR 1	28	28
C3	AE Y MIN	Low light AE fluctuation THR 2	20	20
C4	MD2 SPD	Focus speed at MODE 2	61	61
C5	AE CHECK	Re-start up AE THR	10	10
C6	LOW CON THR	THR 1 for judging Low-contrast at MODE 2	10	10
C7	LOW CON THR2	THR 2 for judging Low-contrast at MODE 2	20	20
C8~EF		Not used		
F0		Input column of the unit ID No., etc. Not related to unit operations.	FF	
F1			FF	
F2			FF	
F3			FF	
F4			FF	
F5			FF	
F6			FF	
F7			FF	
F8			FF	
F9			FF	
FA			FF	
FB			FF	
FC			FF	
FD			FF	
FE			FF	
FF			FF	

Table 7-2 (6).

7-1-6. 6 Page, 1 Page Address List

The camera adjustment mode can be set by performing the following data settings at page: 6 or page: 1. (These page data can be set temporary, but when the main power (6.3V) is turned off, the original value (normal value) will be returned. Therefore, these adjustment modes can be released very simply by turning the main power off.)

(Example) The camera adjustment mode (1) is set by setting data: 01 to page: 6, address: 00. The F page write protect will also be released.

1. Page 6

Address	Adjustment Mode	Data	Function
00	Camera adjustment mode	01 10 11	Camera adjustment mode (1), F page write protect released Normal Camera adjustment mode (2), F page write protect released
01	Camera adjustment switch **Note:** To set this address adjustment mode, it is necessary to press the PAUSE button of the adjusting remote control unit after setting the data.	00 01 03 05 07 09 0B 0D 0F 11 13 15 17 1D	Normal IRIS OPEN, AGC HOLD IRIS CLOSE1, AGC HOLD IRIS CLOSE2, AGC MIN IRIS CLOSE3, AGC MAX ND0.5 SHUTTER (PAL=1/160, NTSC=1/190) ND0.8 SHUTTER (PAL=1/320, NTSC=1/380) AWB PRESET1: 3200K PRESET DATA take in WB 3200K PRESET: Indoor white balance mode AWB PRESET2: Preparation of 3200K PRESET DATA take in ZOOM HUNTING1 ZOOM SPDSLOW ZOOM HUNTING2 ZOOM SPDFAST AE FB adjustment mode (IRIS: OPEN, AGC: REF, SHUTTER: 1/100 (NTSC), 1/120 (PAL)) EEPROM PRE WRITE: Page F initial data write
05	Shutter mode	00 19	NTSC=1/60, PAL=1/50 1/2000
06	FOCUS limiter ON/OFF	00 01	FOCUS limiter ON (Normal) FOCUS limiter OFF
07	ZOOM limiter ON/OFF	00 01	ZOOM limiter ON (Normal) ZOOM limiter OFF
08	ZOOM speed SLOW/FAST	00 01 02 03	Normal ZOOM speed SLOW ZOOM speed FAST ZOOM speed SUPER SLOW
09 ★	COMPLEATED FLAG	00 01	Camera Adjustment not completed Camera adjustment completed
11 ★	ROM VERSION	01 02 03	Camera micro processor ver1 Camera micro processor ver2 Camera micro processor ver3
0C ★	LENS INITIAL END	00 01	During the initial operation of the lens Lens initial operation completed

Addresses with ★ are exclusively for reading.

Table 7-3.

2. Page 1

Address	Adjustment Mode	Data	Function
E6	VH address L		Title horizontal/vertical position (L)
E7	VH address H		Title horizontal/vertical position (H)

Table 7-4.

7-1-7. Adjustment Connector

Most of the measuring points for the camera section adjustment are concentrated on CN701 of the VC-122 board. Connect the oscilloscope and etc. via the measuring pin (J-6082-139-A). The following table lists the terminal numbers and the signal names of CN701.

Terminal Number	Signal Name	Terminal Number	Signal Name
1	D5V	2	NC
3	NC	4	CAM SI
5	NC	6	CAM SO
7	$\overline{\text{CS OPD}}$	8	$\overline{\text{CAM SCK}}$
9	$\overline{\text{CS CORE}}$	10	GND
11	IRIS OUT	12	NC
13	V SUB CHK	14	CAM C
15	PG CONT	16	GND
17	NC	18	CAM Y

Table 7-5.

7-1-8. Data Processing

The calculation of the DDS display and the adjusting remote control unit display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 7-6. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

②

The lower digits of the hexadecimal notation The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	80	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① **B (b)**	176	177	178	179	180	180	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (b d).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 7-6.

7-2. CAMERA SYSTEM ADJUSTMENT

1. Power Supply Voltage Check (DD-48 board)

Subject	Option
Measuring instrument	Digital voltmeter
D5V check	
Measurement point	Pins ⑤ and ⑧ of CN901
Specified value	4.92 ± 0.15 Vdc
D4V check	
Measurement point	Pin ④ of CN901
Specified value	3.98 ± 0.15 Vdc
CAM 5V check	
Measurement point	Pins ⑦ and ⑩ of CN901
Specified value	$4.86^{+0.15}_{-0.11}$ Vdc
CAM 15V check	
Measurement point	Pin ⑫ of CN901
Specified value	15.05 ± 0.4 Vdc
CAM -9V check	
Measurement point	Pin ⑨ of CN901
Specified value	-8.5 ± 0.4 Vdc

Checking method:

1) Check that each power supply voltage satisfies the specified value.

2. Page F Data Initialization

Note: It is necessary to perform all adjustments of the camera section from the beginning again if the data of page F has been initialized.

Initializing method:

1) Check that the data of page: 6, address: 09 is 00.
   (Display indicating that page F data can be initialized)
2) Check that the data of page: 6, address: 01 is 00.
3) Set data: 1D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Page F data initialization execution.
   The data of all addresses of page F will be initialized.)
4) Check that the data of page: 6, address: 09 is 01.
   (Displays that the initialization of page F data has been completed)
5) Set data: 00 to page: 6, address: 01. and press the PAUSE button of the adjusting remote control unit.
   (Releases the page F data initialization mode)
6) After performing "Page F data modification", perform all the adjustments of the camera section (page F).

3. Page F Data Modification

The data (initial data) that is automatically written on page F after the initialization of the page F data will differ according to some camera micro processor versions. Change the data by manual input, and arrange it.

Note: When changing the data, to write the data to the non-volatile memory, press the PAUSE button of the adjusting remote control unit every time the new data is set.

Address	Data
00 (ID)	3E
0A (LOW LIGHT CS)	C0
11 (CORE EFFECT)	A0
12 (CORE MAT R)	24
14 (CORE BURST LEVEL)	38
15 (CORE CHROMA DLY)	02
17 (CORE VHAPCN)	17
5C (AWB DELAY TM)	0C
68 (AE FUNCTION)	02
6A (JITEISU DOWN)	28
6B (JITEISU UP)	0D
8C (ZOOM SPD FAST)	73
8D (ZOOM SPD SUPER)	6A
8E (ZS INIT SLOW)	6A
8F (ZS INIT FAST)	6A
94 (ZOOM SPD SLOW)	29
9E (ZOOM PULSE UNIT)	EE
A2 (FB ZOOM SL)	02
A3 (FB ZOOM SH)	07
AE (NTSC PAL/H DEF DELAY)	21
B0 (CORE OTHER)	10
B1 (CORE Y GAIN)	3A
B2 (E LOW LIGHT START)	30
C0 (MAX CHK NGCNT)	14

[Distinguishing the Camera Micro Computer (IC709) Versions]

Each version can be distinguished by looking at the part name of the camera micro processor or the data of page: 6, address: 11.

Version	Part Name	Page: 6 Address: 11
Ver.2	CXP80624-424R	02
Ver.3	CXP80624-434R	03

4. 28 MHz Original Oscillation Adjustment (VC-122 board)

Subject	Not required
Measurement Point	Pin ⑰ of IC706 (14 MHz)
Measuring Instrument	Frequency counter
Adjusting Element	CT801
Specified Value	14187500 ± 71 Hz

Adjusting method:

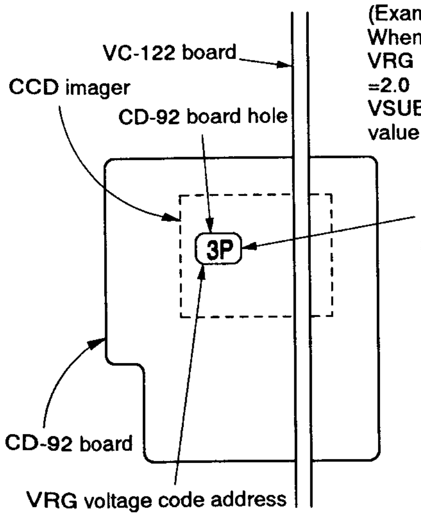
1) Use CT801 to adjust the oscillation frequency to 14187500 ± 71 Hz.

5. V SUB Adjustment (VC-122 board)

Subject	Not required
Measurement Point	Pin ⑬ of CN701 (V SUB CHK)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	04 (V SUB)
Specified Value	(Imager display voltage) ± 0.1 Vdc

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 04, and adjust the voltage of pin ⑬ of CN701 to (imager display voltage) ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.



(Example)
When the display is 3P, the VRG voltage specified value =2.0 ± 0.1 Vdc, and the VSUB voltage specified value =14.0 ± 0.1 Vdc.

VRG voltage code address

Code address	Voltage (Vdc)
1	1.0
2	1.5
3	2.0
4	2.5
5	3.0
6	3.5
7	4.0

VSUB voltage code address (Note)

Code address	Voltage (Vdc)
E	9.5
F	10.0
G	10.5
H	11.0
J	11.5
K	12.0
L	12.5
M	13.0
N	13.5
P	14.0
Q	14.5
R	15.0
S	15.5
T	16.0
U	16.5
V	17.0
W	17.5
X	18.0
Y	18.5
Z	19.0

Fig. 7-7.

Note: This VSUB voltage code address can not be used for other models.

6. VRG Adjustment (VC-122 board)

Subject	Not required
Measurement Point	Pin ⑮ of CN701 (PG CONT)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	05 (VRG)
Specified Value	(Imager display voltage) ± 0.1 Vdc

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 05, and adjust the voltage of pin ⑮ of CN701 to (imager display voltage) ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.

7. CCD Imager Correction Data Write

Subject	Not required
Adjustment Page	F
Adjustment	1D to 2C (CCD-DEFECT)

Perform CCD imager correction data write in the following cases.

1. When the CCD imager has been replaced
2. The ocassion of exchaning a camera micro processor or EEPROM (IC712).
3. When the page F data has been initialized

In the case of 1, as the correction data is not required for the CCD imager for repair, adjust all data of addresses 1D to 2C to “00”.

In the case of 2 and 3, write the correction data attached to the shield case of VC-122 board to addresses 1D to 2C.

If the correction data are not attached, adjust all data of addresses 1D to 2C to “00”.

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Write the correction data to page: F, addresses: 1D to 2C.
   Note: To perform write to the non-volatile memory, press the PAUSE button of the adjusting remote control unit before changing addresses.

Processing after completing adjustments

1) If the CCD imager has been replaced, remove the old correction data label attached on the shield case (UPPER) of VC-122 board.

8. HALL Adjustment

Subject	Not required
Measurement Point	DDS display of EVF or monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	08 (HALL GAIN) 09 (HALL OFFSET)
Specified Value	31 to 35 during IRIS OPEN B1 to B5 during IRIS CLOSE

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (HALL output display mode setting)
3) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
4) Set data: 40 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
5) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and set to W_2.
6) Set data: 30 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
7) Read the DDS display data, and set to W_1.
8) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS OPEN mode setting)
9) Read the DDS display data, and set to K_1.
10) Set data: 40 to page: F, address: 08, and press the PAUSE button.
11) Read the DDS display data, and set to K_2.
12) Convert W_1, W_2, K_1, K_2 to decimal notation, and obtain W_1', W_2', K_1', K_2'. (Refer to Table 7-6. "Hexadecimal notation-decimal notation conversion table".)
13) Calculate X_1' using the following equations (decimal notation calculation).
    $A'=W_2'+K_1'-W_1'-K_2'$ ··························· Equation 1
    $B'=W_1'-K_1'$ ··· Equation 2
    $X_1'=\dfrac{2048+(48\times A')-(16\times B')}{A'}$ ················· Equation 3
14) Convert X_1' to hexadecimal notation, and obtain X_1.
    (Round off to one decimal place)
15) Set data: X_1 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
16) Change the data of page: F, address: 09, and adjust the DDS display data to "33".
17) Press the PAUSE button of the adjusting remote control unit.
18) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (IRIS CLOSE mode setting)
19) Read the DDS display data, and set to W_0. If W_0 lies within the "B1" to "B5" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.
20) Convert W_0 to hexadecimal notation, and obtain W_0'.
21) Calculate X_2' using the following equations (decimal notation calculation).
    $C'=W_0'-B'-51$ ····································· Equation 4
    $X_2'=\dfrac{(128-B')\times(X_1'-48)+48\times C'}{C'}$ ············ Equation 5
    (X_1' and B' are values obtained from equations 2 and3)
22) Convert X_2' to hexadecimal notation and obtain X_2.
    (Round off to one decimal place)
23) Set data X_2 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
24) Change the data of page: F, address: 09, and adjust the DDS display data to "B3".
25) Press the PAUSE button of the adjusting remote control unit.
26) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (IRIS OPEN mode setting)
27) Check that the DDS display data lies within the "31" to "35" range.

Processing after Completing Adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

9. Flange Back Adjustment

Subject	Chart for flange back adjustment (1998 ± 5mm from the front side of the lens Luminance: 300 ± 50 lux)
Measurement Point	Check the operations on the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	86 (WIDE LIMIT), 87 (WIDE LIMIT H), 88 (TELE LIMIT), 89 (TELE LIMIT H), 8A (STEP ZERO), 8B (STEP ZERO SPAN)

Adjusting method:

1) Turn the auto focus off.
2) Adjust the focus using the focus knob.
3) Check that the flange back adjustment chart center and the exposure display center coincide at both zoom lens TELE end and WIDE end.
4) Release the protect.
   Page: 6, address: 00, data: 01
5) Check that the data of page: 6, address: 09 is 00.
   (Flange back adjustment possible display)
6) Check that the page: F, address: 86 to 8B data is at the initial value. (Refer to Table 7-2. "Page F address list")
7) Set data: 01 to page: F, address: AC.
   (This causes automatic adjustment to be performed. Adjustments are performed at the zoom lens TELE end first, and then at the WIDE end. The adjustment data is automatically input to page: F, addresses: 86 to 8B.)
8) Check that the data of page: 6, address: 09 is 01.
   (Display indicating flange back adjustment completion)

Processing after completing adjustments

1) Set data: 00 to page: F, address: AC.
2) Turn off the main power supply (6.3V).

10. Flange Back Check

Subject	Siemens star (2m (or 1.4m) from the front of the lens)
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Specified Value	$D_2=D_1 \pm 5$

Checking method:

1) Set data: 01 to page: 6, address: 00. (Camera adjustment mode)
2) Set data: B0 to page: F, address: AF. (Focus step display mode)
3) Place the Siemens star 2m (or 1.4m) from the front of the lens.
4) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appears on the image displayed on the monitor TV screen.
5) Turn off the auto-focus.
6) Shoot the Siemens star with the zoom TELE end.
7) Rotate the focus ring, and adjust the focus.
8) Adjust to the zoom WIDE end.
9) Read the focus step value (4 digits) displayed on the TV monitor, and take the value as D_1.
10) Rotate the focus ring, and adjust the focus.
    Read the focus step value here, and take the value as D_2.
11) Check that $D_2=D_1 \pm 5$.

Process after checking

1) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.

11. SYNC Level Adjustment (VC-122 board)

Subject	Not required
Measurement Point	Pin ⑱ of CN701 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	06 (VREF-Y)
Specified Value	A=150 ± 5 mV

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Change the data of page: F, address: 06, and adjust so that the SYNC level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

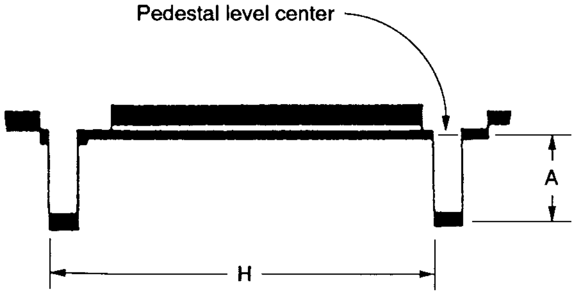


Fig. 7-8.

12. BURST Level Adjustment (VC-122 board)

Subject	Not required
Measurement Point	Pin ⑭ of CN701 (CAM C)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	07 (VREF-C)
Specified Value	A=150 ± 5 mVp-p

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Change the data of page: F, address: 07, and adjust so that the burst level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

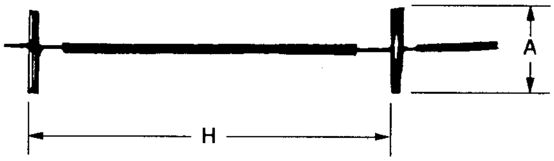


Fig. 7-9.

13. A/D Offset Adjustment

Subject	Not required
Measurement Point	DDS display on the EVF or the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	0C (AD REF)
Specified Value	46 to 47

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE AGC MIN mode setting)
3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Y sampling output mode setting)
4) Set data: 35 to page: 1, address: E6.
   (Setting 1 of the sampling position)
5) Set data: 6D to page: 1, address: E7.
   (Setting 2 of the sampling position)
6) Change the data of page: F, address: 0C, and adjust the average value of the DDS display (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor display) to 46 to 47.
   (Set the data of address 0C to the maximum value satisfying the specification.)
7) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Turn the main power supply (6.3V) off.

14. Carrier Balance Adjustment

Subject	Not required
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	03 (CS SL)
Specified Value	The center of the black luminance point should lie within the 1 ϕ circle whose center is the principle point.

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01.
2) Set data: 07 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE, AGC MAX mode setting)
3) Change the data of page: F, address: 03, and adjust so that the center of the black luminance point coincides with the principle point.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

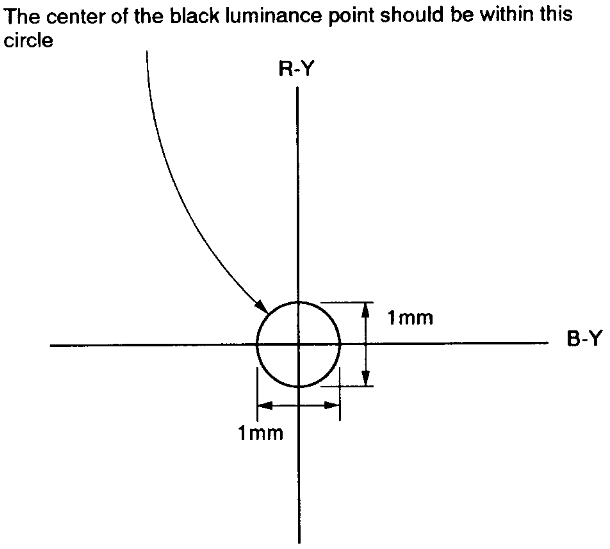

The center of the black luminance point should be within this circle
R-Y
1mm
B-Y
1mm

Fig. 7-10.

15. Picture Frame Setting

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor.
Specified Value	A=B, C=D, t=0 ± 0.1 msec

Setting method:

1) Turn the auto focus off.
2) Adjust the focus using the focus knob.
3) Adjust the zoom and the camera direction, and set to the specified position.
4) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "color bar chart standard picture frame" and "white pattern standard picture frame".

Check on the oscilloscope

1. horizontal period

2. Vertical period

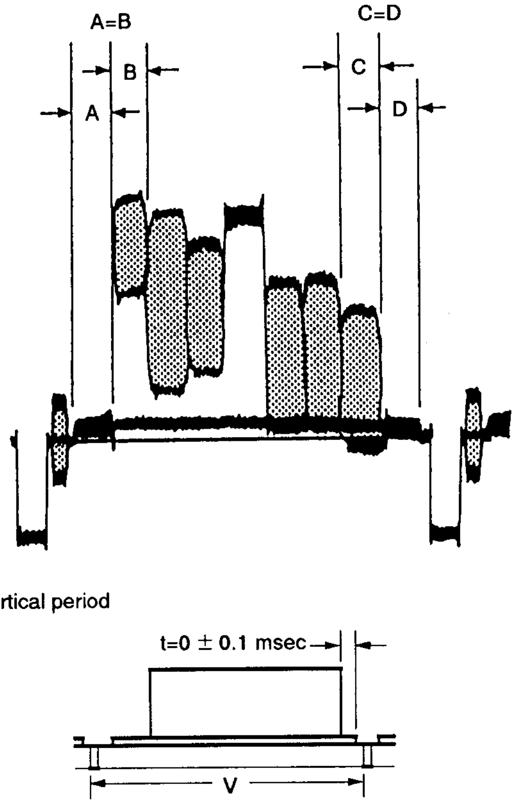

A=B
C=D
B
C
A
D
t=0 ± 0.1 msec
V

Fig. 7-11.

Check on the TV monitor

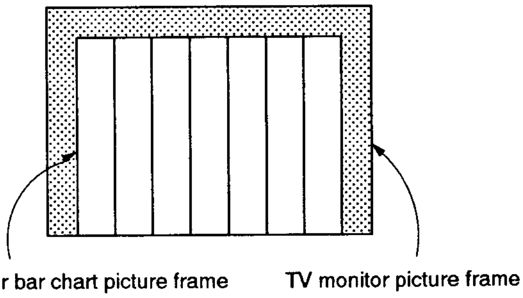

Color bar chart picture frame
TV monitor picture frame

Fig. 7-12.

16. IRIS Level Adjustment (VC-122 board)

Subject	Color bar standard picture frame
Measurement Point	Pin ⑪ of CN701 (IRIS OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	63 (AGC MIN)
Specified Value	A=200 ± 5 mV

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 63, and adjust so that the IRIS OUT signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

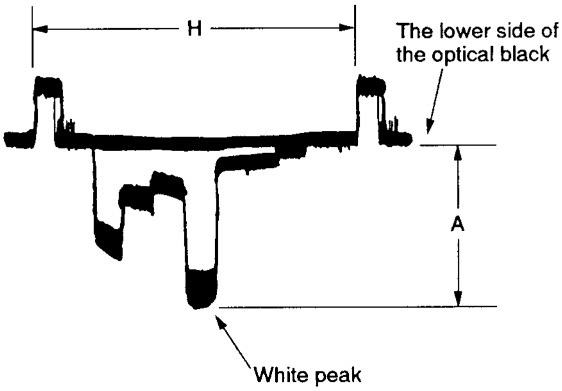


Fig. 7-13.

17. MAX GAIN Adjustment (VC-122 board)

Subject	Color bar standard picture frame
Filter	ND filter 1.0 (2 sheets) and 0.4 (1 sheet), 0.1 (1 sheet)
Measurement Point	Pin ⑱ of CN701 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	64 (AE MIN L)
Specified Value	A=200 ± 5 mV

Adjusting method:

1) Place the ND filter 2.5 (1.0+1.0+0.4+0.1) on the lens.
2) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 64, and adjust so that the CAM Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

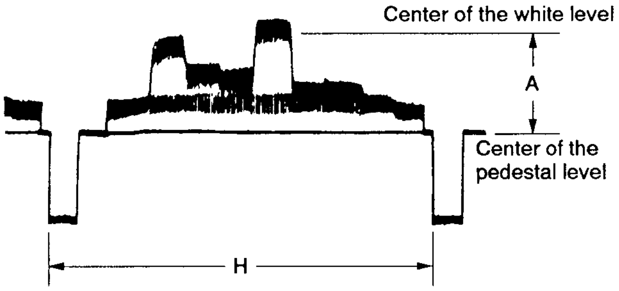


Fig. 7-14.

18. IRIS IN/OUT Adjustment

Subject	White pattern standard picture frame
Measurement Point	DDS display of the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	39 (AWB IRIS IN) 3A (AWB IRIS OUT)

Adjusting method:

1) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (HALL data display)
3) Set data: 0B to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND0.8 shutter mode setting)
4) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor), and set to D39.
5) Set data: D39 to page: F, address: 39, and press the PAUSE button of the adjusting remote control unit.
6) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND0.5 shutter mode setting)
7) Read the DDS display data and set to D3A.
8) Set data: D3A to page: F, address: 3A, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the ND0.5 shutter mode)

19. Pre-white Balance Adjustment

Subject	White pattern standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	33 (R CONT REF), 34 (B CONT REF)
Specified Value	The center of the white luminance point should lie within the circle with a diameter of 1mm and whose center is the principle point

Adjusting method:

1) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (WB 3200K preset mode setting)
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
3) Change the data of addresses:33 and 34 of page: F alternately, and coincide the white luminance point to the principle point.
   Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
   If not, the new data will not written to the memory.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the preset mode)
2) Set data: 10 to page: 6, address: 00.
   (Protect mode setting)

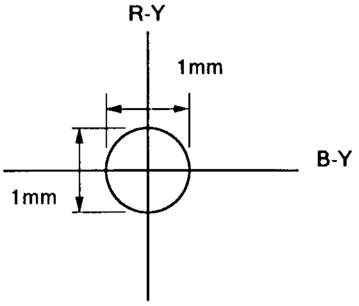


Fig. 7-15.

20. Color Reproduction Adjustment

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	18 (CORE B–Y GAIN), 19 (CORE R–Y GAIN), 1A (CORE R–Y HUE), 1B (CORE B–Y HUE)
Specified Value	All color luminance points should settle within each color reproduction frame.

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Indoor white balance mode setting)
3) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
4) Change the data of addresses 18 to 1B of page: F, and settle each color luminance point in each color reproduction frame.
   Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
   If not, the new data will not be written to the memory.
5) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01 and press the PAUSE button of the adjustment remote control unit.
   (Release of the adjustment mode)
2) Set data: 10 to page: 6, address: 00.
   (Protect mode setting)

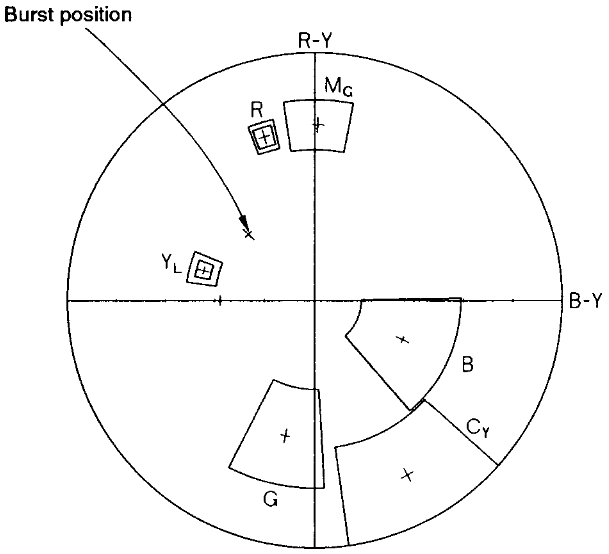


Fig. 7-16.

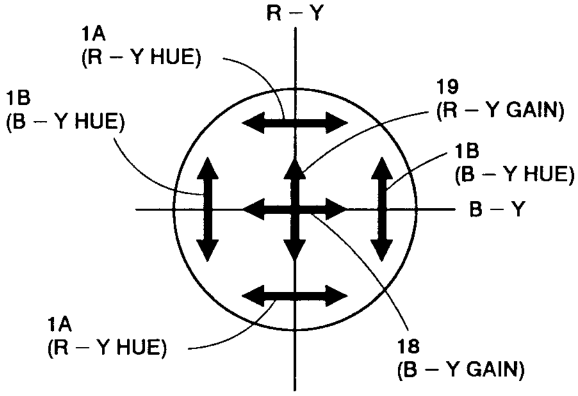


Fig. 7-17. Direction of the Movements of the Adjustment Address and Luminance Point

21. Auto White Balance Preset Adjustment

Subject	White pattern standard picture frame
Adjustment Page	F
Adjustment Address	2D (R REF L), 2E (R REF H), 2F (G REF L), 30 (G REF H), 31 (B REF L), 32 (B REF H)

Adjusting method:

1) Turn the power of the unit OFF/ON.
2) Check that the data of page: 6, address: 09 is 00.
   (Auto white balance preset adjustment possible display)
3) Set data: 11 to page: 6, address: 00, and wait at least 2 seconds.
   (Camera adjustment mode 2 setting)
5) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (3200K preset data take in preparation mode)
6) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (When the 3200K preset data is taken in, the data will be automatically input to addresses 2D to 32 of page F.)
7) Check that the data of page: 6, address: 09 is 01.
   (Auto white balance preset adjustment completion display)

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the auto white balance preset mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode 2)

22. Auto White Balance Adjustment

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	Check with the DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	35 (AWB NORM R) 36 (AWB NORM B)
Specified Value	R ratio 2980 ± 40 B ratio 5D80 ± 40

Note: Check that "Auto White Balance Preset Adjustment" have been completed.

Adjusting method:

1) Place the C14 filter for color temperature correction on the lens.
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
3) Set data: D0 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance adjustment mode setting)
4) Set data: 82 to page: F, address: AF.
   (R ratio display mode setting)
5) Change the data of page: F, address: 35, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to 2980 ± 40.
6) Press the PAUSE button of the adjusting remote control unit.
7) Set data: 83 to page: F, address: AF.
   (B ratio display mode setting)
8) Change the data of page: F, address: 36, and adjust the average value of the DDS display data to 5D80 ± 40.
9) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Release of the white balance adjustment mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode 2)

23. White Balance Check

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 7-18. A to C

Checking method:

1) Check that the lens is not covered with either filter.
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
3) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Indoor white balance mode setting)
4) Check that the center of the white luminance point is within the circle shown in Fig. 7-18.A.
   (Indoor white balance check)
5) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance mode setting)
6) Set data: 01 to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance high speed tracking mode setting)
7) Set data: 91 to page: F, address: AF (R, B ratio (M) display mode setting), and check that the top 2 digits and bottom 2 digits of the DDS display are 3D to 43. Or check that the center of the white luminance point is within the circle shown in Fig. 7-18. A.
8) Place the C14 filter on the lens.
9) Check that the center of the white luminance point settles in the circle shown in Fig. 7-18. B.
   (Auto white balance outdoor mode check)
10) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
11) Check that the center of the white luminance point settles in the circle shown in Fig. 7-18. C.
    (Auto white balance outdoor mode check)

Processing after completing adjustments

1) Set data: 0C to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
   (Release of the auto white balance fast tracking mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode 2)
3) Set data: 00 to page: 6, address: 01, and press the PAUSE button.

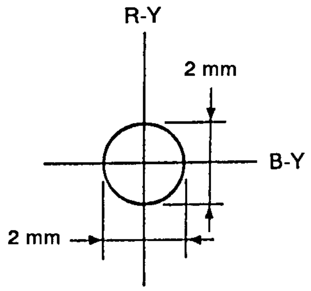


Fig. 7-18. A

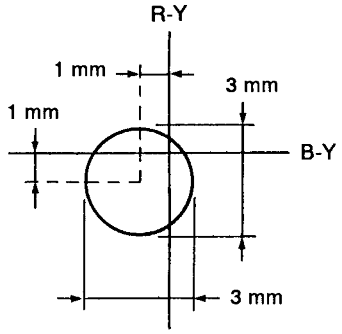


Fig. 7-18. B

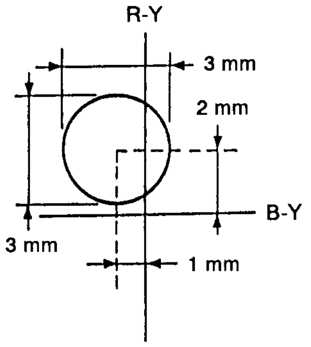


Fig. 7-18. C

24. Linear Matrix Adjustment

Subject	Color bar standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3D (DMAT HUE) 3E (DMAT GAIN)

Note 1: Check that position that was set in the color bar chart picture frame "15. Picture Frame Setting" is maintained, before beginning adjustments.

Adjusting method:

1) Remove the filter C14 for color temperature correction.
2) Release the protect.
   Page: 6, address: 00, data: 01
3) Color bar data sampling mode setting
   1. Set data: Fl to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   2. Set data: 2E to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.

   (Check that the colors on the monitor display at the color modulation stop mode have disappeared)
4) Specifying the Yellow position
   1. Set data: C9 to page: 1, address: E6.
   2. Set data: B6 to page: 1, address: E7.
5) Set data: 02 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (R–Y data display mode setting)
6) Read the average value of the DDS display data (Note 2), and set to Y_1.
7) Specifying the Red position
   1. Set data: 59 to page: 1, address: E6.
   2. Set data: 6D to page: 1, address: E7.
8) Select page: F and read the average value of the DDS display data (Note 2), and set to R_1.
9) Place the filter C14 for color temperature correction on the lens. (Ensure that the picture frame of the chart does not shift at this time.)
10) Specifying the yellow position.
    1. Set data: C9 to page: 1, address: E6.
    2. Set data: B6 to page: 1, address: E7.
11) Select page: F and read the average value of the DDS display data (Note 2), and set to Y_2.
12) Specifying the Red position
    1. Set data: 59 to page: 1, address: E6.
    2. Set data: 6D to page: 1, address: E7.
13) Select page: F and read the average value of the DDS display data (Note 2), and set to R_2.
14) Convert Y_1, R_1, Y_2, R_2 to decimal notation to obtain Y_1', R_1', Y_2' and R_2'.
    (Refer to Table 7-6. "Hexadecimal notation-decimal notation conversion table")
15) Calculate X_1' from the following equation (decimal notation calculation).
    $X_1'=Y_2'-Y_1'$
16) Calculate D_{3D} from the following table
    (D_{3D} is hexadecimal notation)

X_1' value	**D_{3D}**
$-1 \leqq X_1' \leqq 1$	F0
$X_1' > 1$	F1
$X_1' < -1$	FF

17) Set data: D_{3D} to page: F, address: 3D, and press the PAUSE button of the adjusting remote control unit.
18) Calculate X_2' from the following equation (decimal notation calculation).
    $X_2'=R_2'-R_1'$
19) Calculate D_{3E} from the following table.

X_2' value	**D_{3E}**
$X_2' \geqq 0$	00
$0 > X_2' \geqq -1$	01
$-1 > X_2'$	02

20) Set data: D_{3E} to page: F, address: 3E, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Release of the sampling mode)
2) Set data: 38 to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.
   (Color modulation ON mode setting)
3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Release of the R–Y data display mode)
4) Turn the main power supply (6.3V) off.

Note 2: As the R-Y data and B-Y data are displayed alternatively, it will be difficult to read the R-Y data. Record this data on a tape, and perform frame advancing playback so that only the R-Y data is read.
(Example)
If the frame advancing playback is performed, the following will be displayed.
$\underline{81} \rightarrow 7A \rightarrow \underline{82} \rightarrow 7A \rightarrow \underline{80} \rightarrow 7A \rightarrow \underline{81} \rightarrow 7C \rightarrow \underline{81} \rightarrow 79$
As the R-Y data is above 80, and the B-Y data is below 7F, the data which is underlined is the R-Y data. If the average value is calculated, the R-Y data will become 81.

25. VIDEO OUT Level Check

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal (Terminated at 75 Ω)
Measuring Instrument	Oscilloscope
Specified Value	Y level=680 ± 40 mV SYNC level=300 ± 20 mV BURST level=300 ± 30 mVp-p

Checking method:

1) Check that the Y level, SYNC level and BURST level satisfy the specified values.

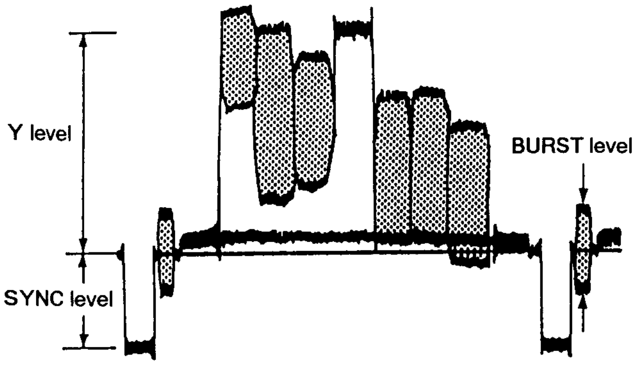


Fig. 7-19.

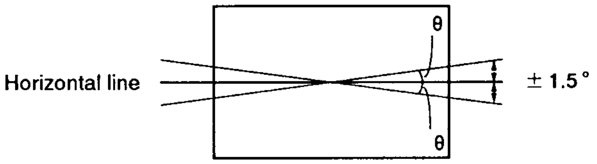
7-3. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

7-3-1. Horizontal Slant Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Specified Value	Refer to Fig. 7-21.

Adjusting method:

1) Adjust RV504 (BRIGHT) so that the CRT can be seen easily and clearly.
2) Loosen the DY (deflection yoke) tightening nut.
3) Rotate DY, and adjust the image so that it is horizontal.
4) Tighten the DY tightening nut.
(Do not tighten it too tightly.)


θ
Horizontal line
± 1.5 °
θ

Specified value: The image should be within ± 1.5 ° of the horizontal line.

Fig. 7-21.

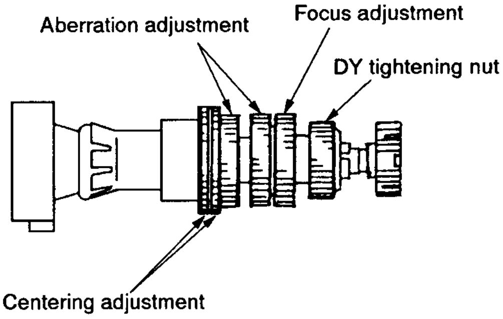

Aberration adjustment
Focus adjustment
DY tightening nut
Centering adjustment

Fig. 7-22.

7-3-2. Centering Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Specified Value	Refer to Fig. 7-23.

Adjusting method:

1) Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform. (Refer to Fig. 7-22.)
   Note: As the centering position changes due to earth magnetism, rotate it 360 ° in the horizontal direction, and adjust with the center section of the modifying position.

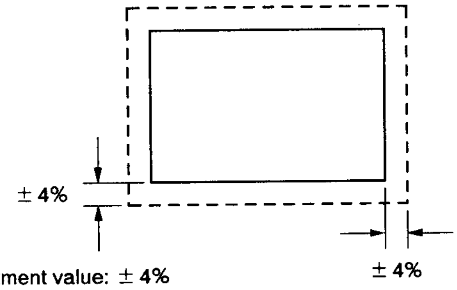


Fig. 7-23.

7-3-3. Focus Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section

Adjusting method:

1) Adjust the focus ring to obtain the optimum focus. (Refer to Fig. 7-22.)

7-3-4. Aberration Adjustment

Model	E-E
Signal	Dot pattern
Specified Value	Refer to Fig. 7-24.

Adjusting method:

1) Adjust the aberration adjustment ring so that the tracing of the dot becomes less than twice the diameter of the dot, or the fan aberration becomes less than the diameter of the dot.
2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

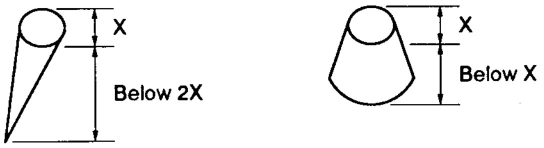


Fig. 7-24.

7-3-5. Horizontal Oscillation Frequency Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP)
Measurement Point	Positive pole terminal of C516
Measuring Instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment Element	RV501
Specified Value	2.60 ± 0.05 Vdc

Adjusting method:

1) Adjust to 2.60 ± 0.05 Vdc using RV501.

7-3-6. Horizontal Amplitude Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	C504
Specified Value	6 ± 2%

Adjusting method:

1) Rotate RV502, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display.
2) Rotate RV504 so that the brightness is the normal level.
3) Adjust the pattern (A) of the H size adjustment capacitor (C504) to "short" or "open", so that the horizontal direction over scan becomes 6 ± 2% (Left and right totals). (Refer to Fig. 7-26.)

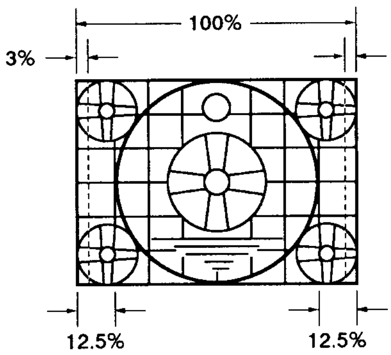
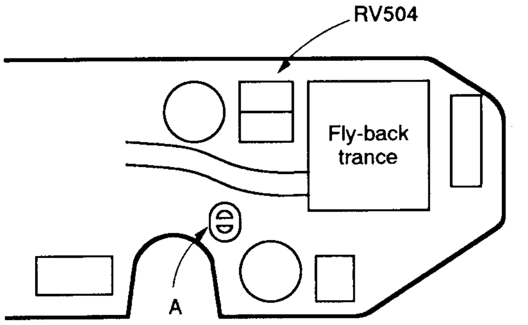


Fig. 7-25.



VF-42 board (section side)

Section A	Size H
Open	Small
Short	Big

Fig. 7-26.

7-3-7. Vertical Amplitude Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	RV502
Specified Value	5 ± 2%

Adjusting method:

1) Adjust RV502 so that the vertical direction over scan becomes 5 ± 2% (Top and bottom totals).

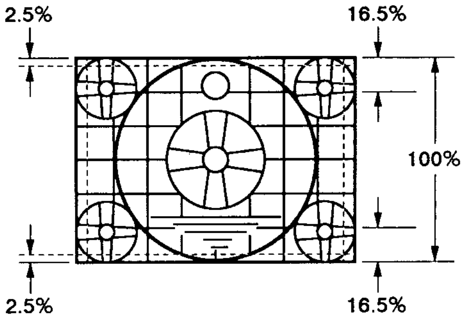


Fig. 7-27.

7-3-8. Brightness, Contrast Adjustments (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	Brightness: RV504 Contrast: RV503

Adjusting method:

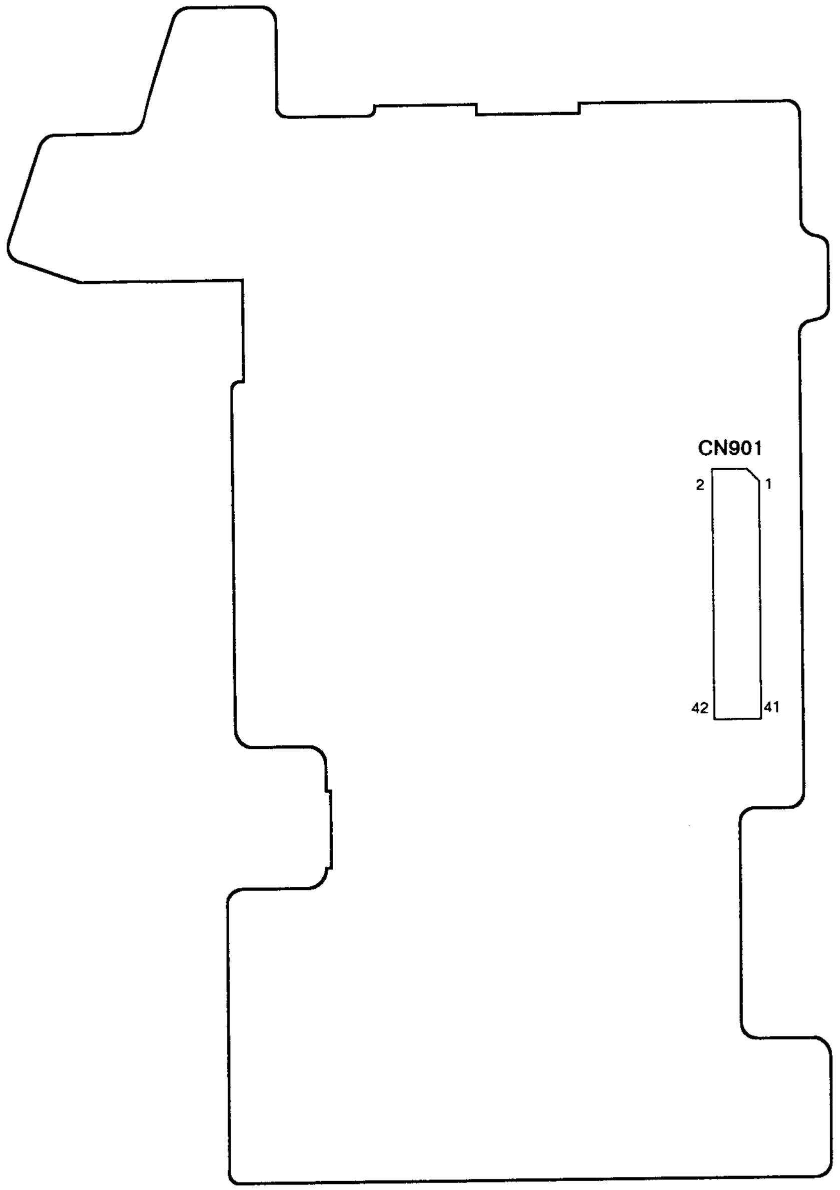
1) Rotate RV504 and RV503 alternately, and adjust so that the bright/dark sections of the gray scale are displayed correctly. (The bright section should be unsatisfactory till the cross hatch appears vague in the monoscope circle. The dark section should be unsatisfactory till the darkest section and the second darkest section of the gray scale cannot be differentiated.)

7-3-9. Horizontal Amplitude, Vertical Amplitude, Focus Check

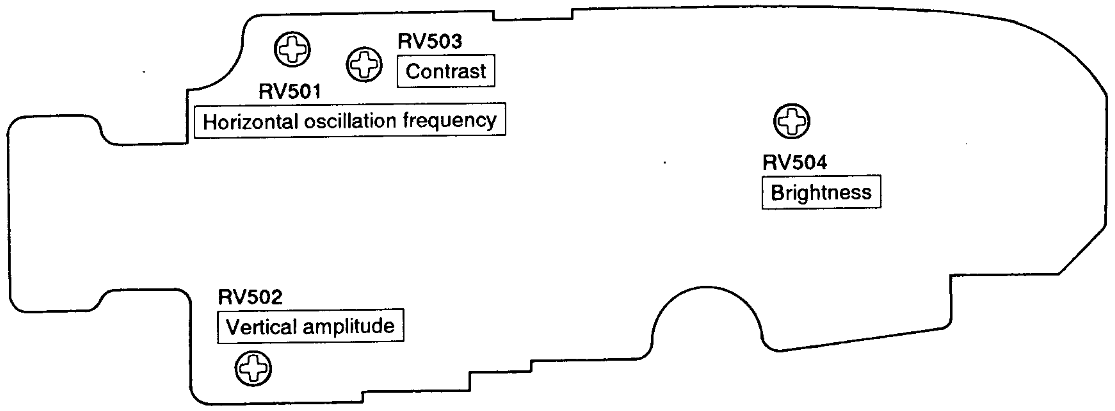
"7-3-6. Horizontal Amplitude Adjustment" and "7-3-7. Vertical Amplitude Adjustment" should both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform [7-3-8. Brightness, Contrast Adjustments] again.
Moreover, check the focus, and if it found to be vague, perform "7-3-3. Focus Adjustment" and "7-3-4. Aberration Adjustment".

7-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

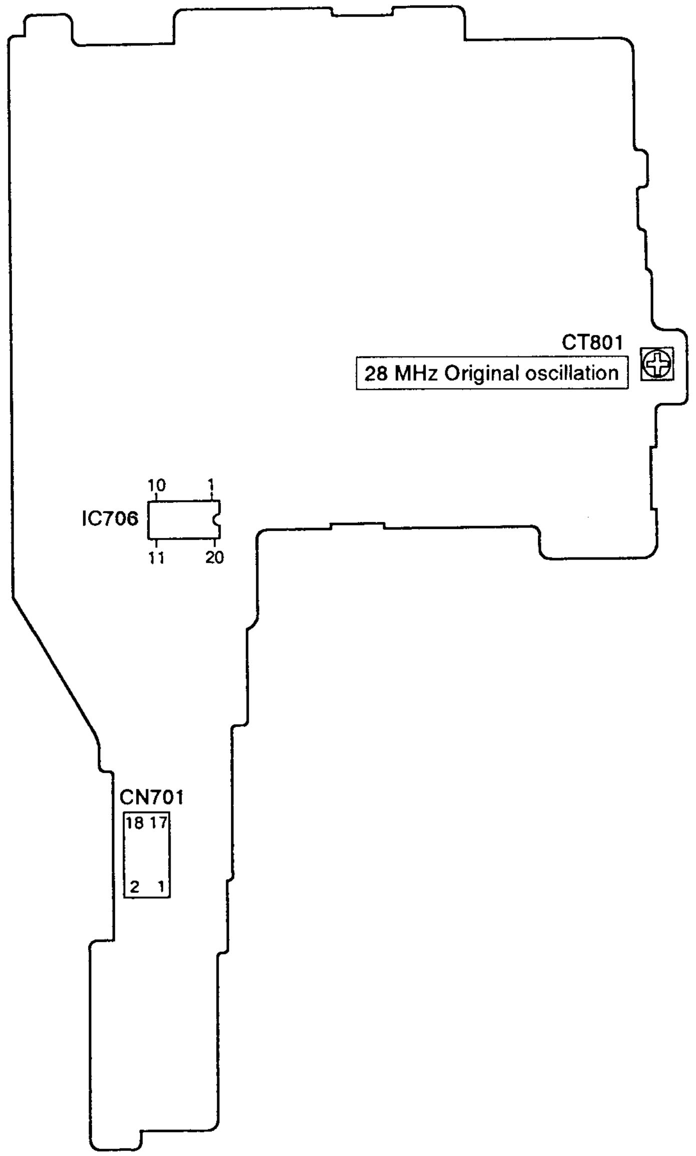
DD-48 BOARD (COMPONENT SIDE)


CN901
2
1
42
41

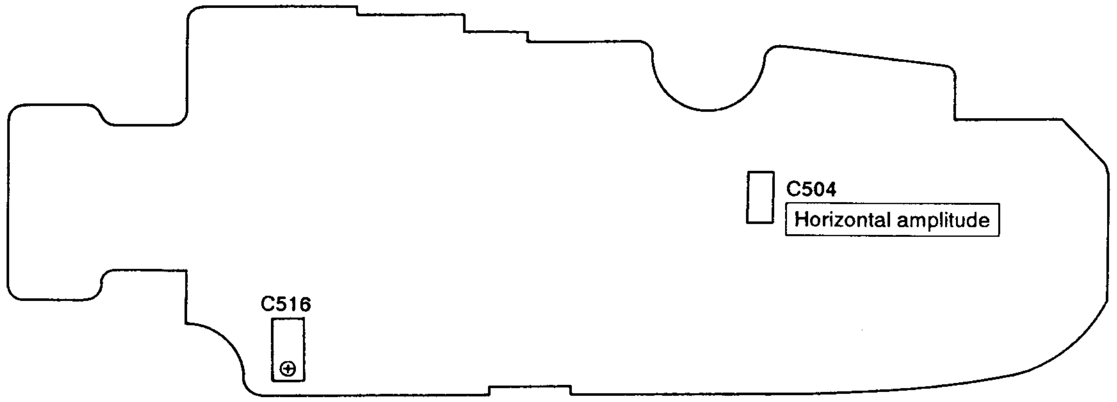
VF-42 BOARD (COMPONENT SIDE)


RV503
Contrast
RV501
Horizontal oscillation frequency
RV504
Brightness
RV502
Vertical amplitude

VC-122 BOARD (CONDUCTOR SIDE)


CT801
28 MHz Original oscillation
10
1
IC706
11
20
CN701
18 17
2 1

VF-42 BOARD (CONDUCTOR SIDE)


C504
Horizontal amplitude
C516

SECTION 8
MECHANICAL SECTION ADJUSTMENTS

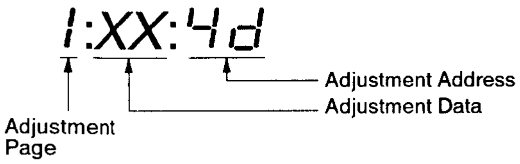
For Mechanical Adjustments
Refer to the separate volume of mechanical adjustment "8 mm Video MECHANICAL ADJUSTMENT MANUAL IV (A Mechanism)" for the adjustments and checks of mechanism section and the mechanical parts replacement. (9-973-199-11)
For setting of the track shift mode, however, refer to the following.

8-1. SETTING THE TRACK SHIFT MODE

Note: Camera part and video part should have been installed.

[Setting Method]

1) Set the adjustment commander to the HOLD ON side.
2) Set page: 1, address: 01 and data: 01, and then release the protector.
3) Set page: D and address: 01.
4) Set adjustment data to 03 (test mode 3) by PLAY or STOP button.
   (When HOLD OFF once after the setting and HOLD ON again, the display of the address data will be changed. To set the another mode with shifting, repeat the procedures from 3).)
5) Set to the HOLD OFF side in order to set the normal mode.



8-2. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surfaces (tape guides, drum, capstan shaft, pinch roller.)
2) Connect to the oscilloscope.
   CH1: VS-95 board CN002 pin ③ (PB RF)
   CH2: VS-95 board CN002 pin ④ (SWP)
3) Play back the tracking alignment tape (WR5-1CP: 8-967-995-07).
4) Check that the RF waveform of the oscilloscope is flat at both inlet and outlet side. (Refer to Fig. 8-1 and 8-2)
   If not flat, perform necessary adjustment according to the separate 8 mm Video Mechanical Adjustment IV (A Mechanism).

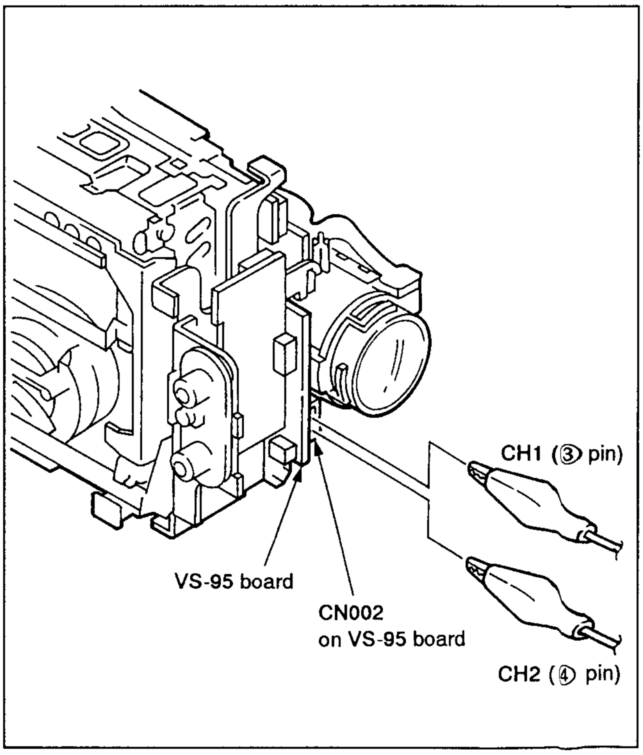


Fig.8-1.

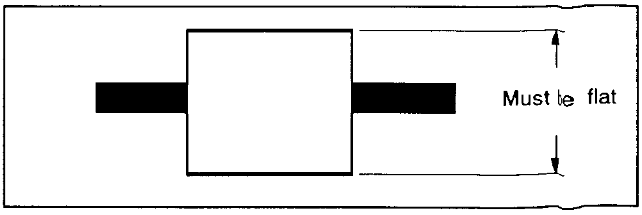


Fig.8-2.

SECTION 9
VIDEO SECTION ADJUSTMENT

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 232.

9-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

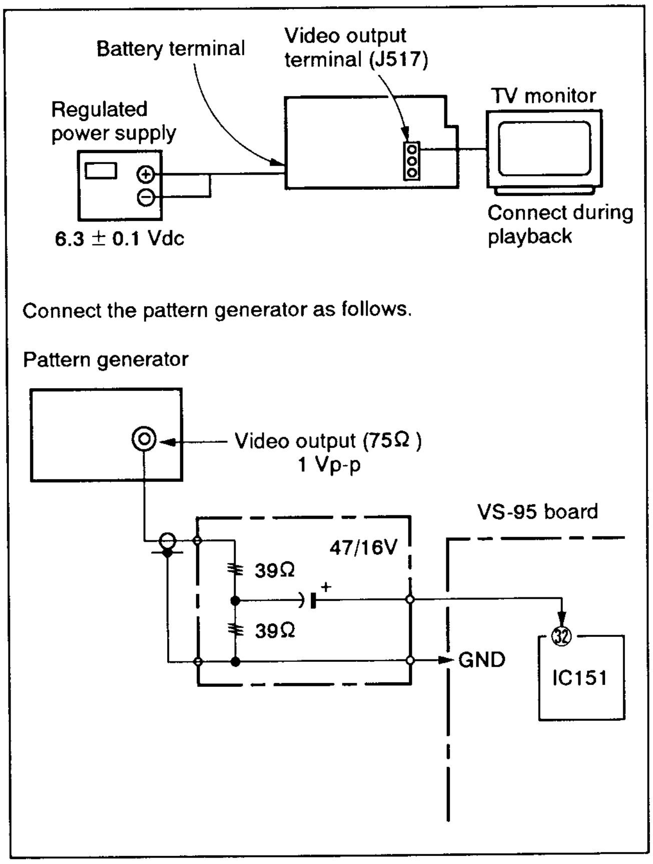
9-1-1. Equipments to be used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape
    For tracking adjustment (WR5-1CP)
    Part Code: 8-967-995-07
    For video frequency characteristics adjustment (WR5-6C)
    Part Code: 8-967-995-17
    For checking operations
    (WR5-4CL)[Note 1]
    Part Code: 8-967-995-56
    (WR5-5CSP)[Note 2]
    Part Code: 8-967-995-47
    Note: The following alignment tapes can also be used.
    1) WR5-3CL (8-967-995-36)
    2) WR5-4CSP (8-967-995-46)
12) Remote control unit for adjustment (J-6082-053-B)
13) DD-48 board extension cord (42P, 0.8 mm)
    Part Code: J-6082-195-A
14) AU-138 board, Cabinet (R) extension cord (20P, 0.8 mm)
    Part Code: J-6082-196-A
15) Mecha deck extension cord (30P, 0.8 mm)
    Part Code: J-6082-167-A

9-1-2. Connecting the equipments

Unless specified otherwise, connect the measuring instruments as shown in Fig. 9-1 and perform the adjustments.

- Camera/player power switch ········Position of the player
- Connect the adjusting remote control unit to the remote terminal (DD-48 board CN902).


Battery terminal
Video output terminal (J517)
Regulated power supply
TV monitor
6.3 ± 0.1 Vdc
Connect during playback
Pattern generator
Video output (75Ω) 1 Vp-p
VS-95 board
47/16V
39Ω
39Ω
GND
32
IC151

Connect the pattern generator as follows.

Fig. 9-1.

9-1-3. How to Set the REC Mode

1. REC key forbidden accept mode cancel
    1. Connect the adjustment remote controller to the REMOTE terminal.
    2. Turn on the power.
    3. Turn on the HOLD switch of the adjustment remote controller.
    4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
    5. Select the page: D address: 02, and set the data to 8F [AF].[Note 1] (REC key forbidden accept mode cancel)
    6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

The REC key is accepted through the above procedure.

2. REC mode setting
    1. Connect the collector of Q200 on the VS-95 board and GND with a jumper wire. (CCD delay (IC154) active mode setting)
    2. Turn on the HOLD switch of the adjustment remote controller.
    3. Select the page: 1 address: A3, and set data to 01.
    4. Select the page: 1 address: 0B, and set data to C8. (Line input mode setting)
    5. Turn off the HOLD switch of the adjustment remote controller.
    6. Press REC buttons of the adjustment remote controller.
    7. Remove the jumper wire and perform "3. Procedure after completed the adjustment", after completing adjustment.

3. Procedure after completed the adjustment

   Be sure to return the mode to REC key forbidden accept mode after adjustment.
    1. Connect the adjustment remoter controller to the REMOTE terminal.
    2. Turn on the power.
    3. Turn on HOLD switch of the adjustment remote controller.
    4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
    5. Select the page: D address: 02, and set the data to 8E [AE].[Note 1] (Setting of the REC key forbidden accept mode)
    6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

Note 1: No mark : AEP, UK model
[ ] : E, Australian model

9-1-4. Precautions upon adjustment

The EVF (Electronic viewfinder) is not required for adjusting the video section.
Remove the following connector when removing the EVF section.

1. VS-95 board CN102 (6 PIN)

The front panel section assembly is required for adjusting the video section. Remove the following connectors when removing the front panel section assembly.

1. AU-138 board CN601 (5 PIN)

The cabinet (R) is required for adjusting the video section. Use the extension cord (J-6082-196-A) when adjusting the video section.

9-1-5. Set-up during Adjustment

As the video signal obtained from the pattern generator is used as an adjustment signal during electric adjustments, ensure that this video output signal is within the specification. Connect the oscilloscope to pin ㉜ of IC151 on the VS-95 board, and check that the amplitude of the sync signal of the video signal is approximately 0.15V, the amplitude of the video section is approximately 0.35V, the amplitude of the burst signal is approximately 0.15V and flat, and that the level ratio of the burst signal and the [red] signal is 0.30: 0.66. The video signal (color bar) used for electric adjustments is shown in Fig. 9-2.

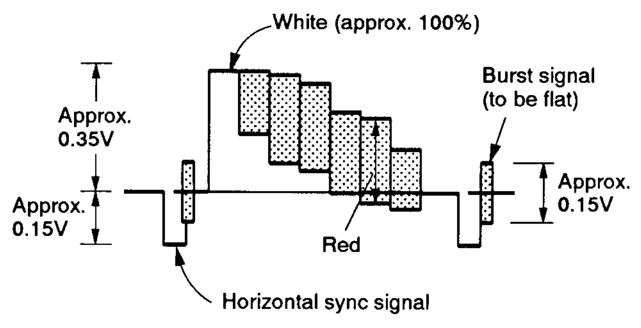


Fig. 9-2. Color Bar Signal of the Pattern Generator

9-1-6. Alignment Tape

The following table lists alignment tapes which are available. Use the tape specified in the signal column for each adjustment. If the type of tape to be used for checking operations is not specified, use whichever type.

Name	Record-ing mode	Tape type	Tape speed	Recording contents		Usage
				Video area	PCM area	
Tracking WR5-1CP	L	MP	SP	CH2: Signal for 1 MHz tape path adjustment		Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-6C	L	MP	LP	RF sweep 0 to 10 MHz Marker 1, 3.58, 5.5, 7 MHz		Frequency characteristics adjustment
Operation check (SP mode) WR5-5CSP	L	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation	• Audio signal (PCM) Monoscope section 20 Hz 20 sec. 400 Hz 20 sec. 14 kHz 20 sec. Color bar section Repeated 4 times 1 kHz 4 minutes	Checking operations
Operation check (LP mode) WR5-4CL	L	MP	LP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation		

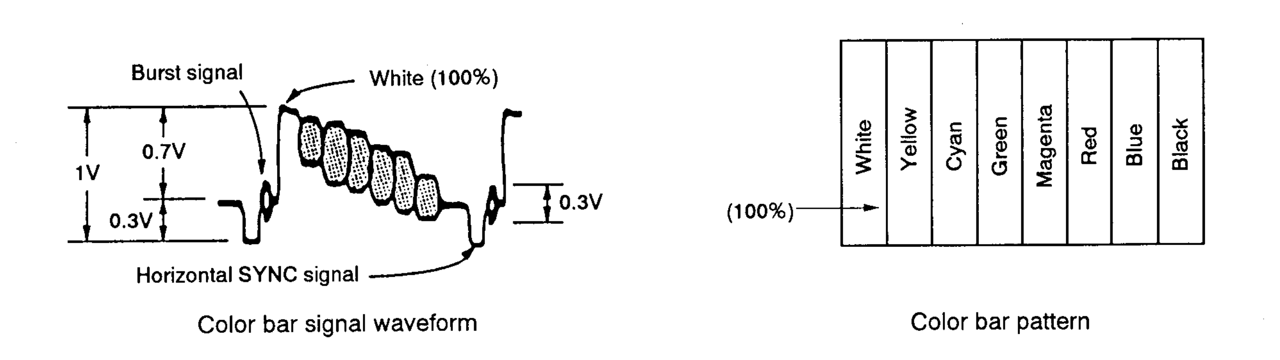
Note: Recording mode
L ······· Conventional mode
E ······· hi8 (hi band) mode

Tape type
MP····· Particle type metal tape
ME····· Evaporated type metal tape

Table 9-1.

Fig. 9-3. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the video input/output terminal (Terminated at 75 Ω)



Color bar signal waveform

Color bar pattern

Fig. 9-3. Color Bar Signals of the Alignment Tape

9-1-7. Output Level and Impedance

Video output Pin jack
Output signal: 1 Vp-p, 75 unbalanced, sync negative

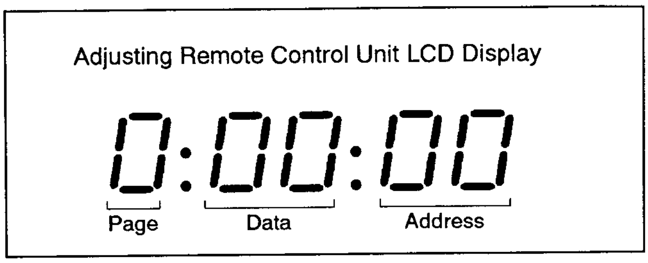
Audio output Pin jack
Specified output: -7.5 dBs
Output impedance: Below 2.2 kΩ

9-1-8. Service Mode

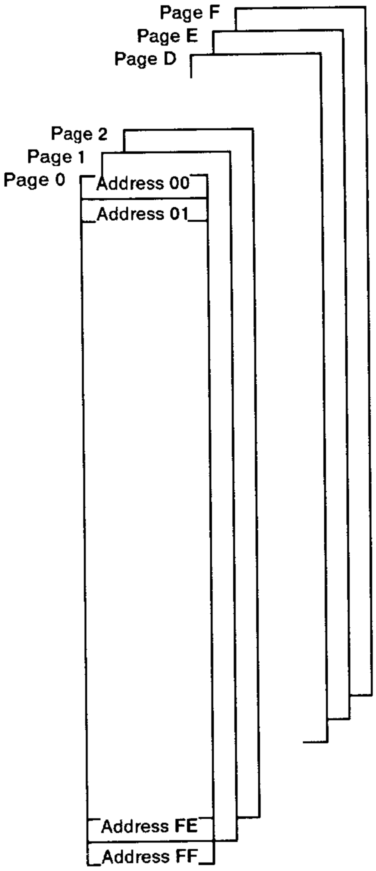
1. Setting the Service mode

The service mode consists of the adjustment mode which adjusts the EVR and the test mode which displays the condition of the unit.

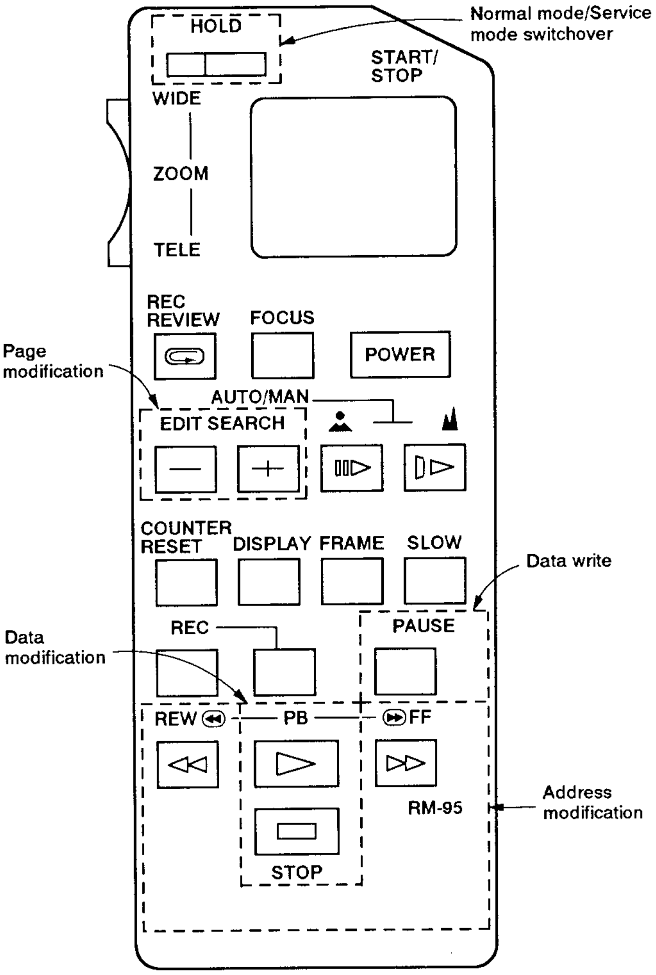
The unit can be shifted into the test mode and adjustment mode by connecting the adjusting remote control unit (set the HOLD switch to the HOLD side).


Adjusting Remote Control Unit LCD Display
0:00:00
Page
Data
Address

(1) Service LANC memory map

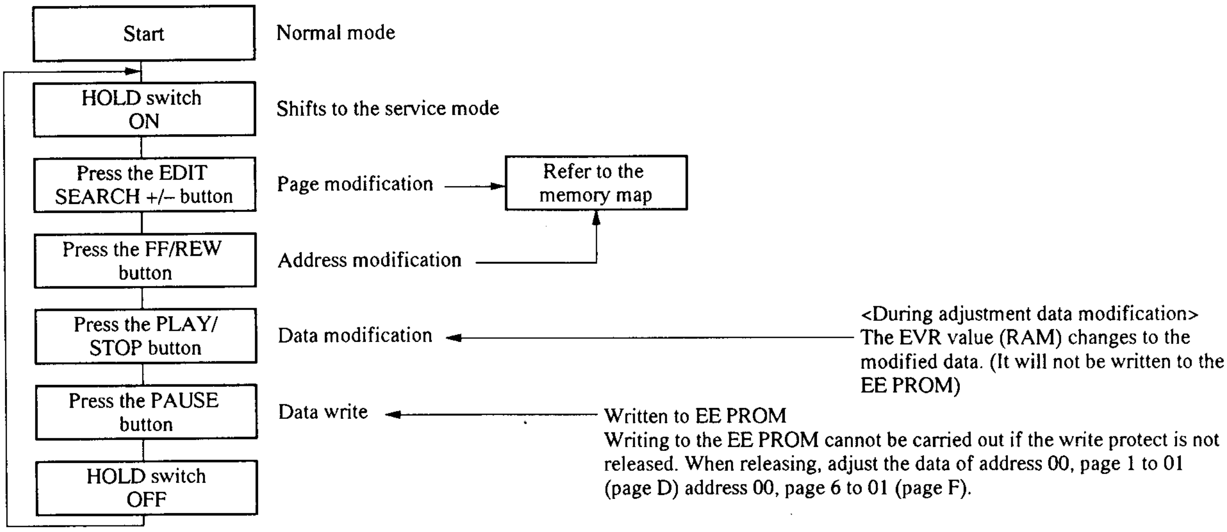

Page F
Page E
Page D
Page 2
Page 1
Page 0
Address 00
Address 01
Address FE
Address FF

Adjusting remote control unit RM-95 (J-6082-053-B)


HOLD
Normal mode/Service mode switchover
START/ STOP
WIDE
ZOOM
TELE
REC REVIEW
FOCUS
POWER
Page modification
AUTO/MAN
EDIT SEARCH
COUNTER RESET
DISPLAY
FRAME
SLOW
Data write
REC
PAUSE
Data modification
REW
PB
FF
RM-95
Address modification
STOP

Page	Page allocation	Description
0	Not used	
1	Mode Control RAM, I/O	RAM and I/O interface data memory area required for operating the mode controller. Data is not held when the power is turned off because this area is not ROM.
2~4	Mechanical Control RAM, I/O	RAM and I/O memory area of the mechanical controller.
5	Not used	
6~8	Camera Control RAM, I/O	RAM and I/O memory area of the camera control.
9	Not used	
A	Camera Control RAM, I/O	RAM and I/O memory area of the camera control.
B, C	Not used	
D	VTR EE-PROM	ROM memory area of the VTR part. Data of this area is held by EE-PROM when the power is turned off. Releasing protect is required for changing data.
E	Not used	
F	Camera EE-PROM	ROM memory area of the camera part. Data of this area is held by EE•P•ROM when the power is turned off.

(2) Shifting to the Service Mode Using the Adjusting Remote Control Unit


Start
Normal mode
HOLD switch ON
Shifts to the service mode
Press the EDIT SEARCH +/– button
Page modification
Refer to the memory map
Press the FF/REW button
Address modification
Press the PLAY/ STOP button
Data modification
Press the PAUSE button
Data write
HOLD switch OFF

<During adjustment data modification>
The EVR value (RAM) changes to the modified data. (It will not be written to the EE PROM)

Written to EE PROM
Writing to the EE PROM cannot be carried out if the write protect is not released. When releasing, adjust the data of address 00, page 1 to 01 (page D) address 00, page 6 to 01 (page F).

Command Name	Command Function	Normal LANC command
Page Up	Page +1	Edit Search +
Page Down	Page –1	Edit Search –
Direc Page Set	Sets the specified page	Event Clear
Address Up	Address +1	Fast Forward
Address Down	Address –1	Rewind
Data Up	Data +1	Play Back
Data Down	Data –1	Stop
Store	Write the data to the EE PROM. RAM	Pause

2. Types of Self-diagnostic Feature

MODE		Contents
TEST	Camera adjustment	Refer to Camera Adjustment
	Switching position adjustment	Refer to each adjustment page
	Battery DOWN adjustment	
	Video, Audio adjustment	
ADJUST	Pass Adjustment track shift	When adjusting tape pass, set this mode and shift the tracking.
	Emergency STOP inhibition	Detection of emergency is inhibited. This allows the following items. • Power is not turned off when the battery is ended. • SP/LP is not automatically distinguished. • Emergence is not detected except for TOP/END detection of the TAPE.
	Read of emergence code	The following functions are added to the emergency display function currently in use. ① The lithium battery is not required because to memorize into EE-PROM is allowed. ② The first emergency and the last emergency are memorized. ③ The mode when the emergency is generated is memorized, in addition to the emergency contents.
	Motor single check	Rotating in forward direction, reverse direction, stopping of each motor can be separately controlled. • Drum motor • Capstan motor • Loading motor
	Function switch check	The acceptance of the function switch of the unit can be confirmed by designating an address. On the contrary, RM-95 can command the substitution for the function switch of the unit.
	Mechanical switch check	The contents of the mechanical switch and the mode switch can be confirmed.
	Sensor check	The following sensor is input by performing A/D converting, and the A/D converted value can be confirmed. TOP sensor, End sensor, S REEL FG, T REEL FG, Thermistor for SWP correction, DEW sensor.
	Reception contents check of wireless remote control	The received code contents of the remote control code can be confirmed.

3. Page D Write Protect

Release/set the page D write protect.

Page 1	Address 00

Data	Function
00	Normal (Write protect condition)
01	Write protect release

4. Page F Write Protect

Release/set the page F write protect.

Page 6	Address 00

Data	Function
10	Normal (Write protect condition)
01	Write protect release

5. Test Mode Setting

Each type of test mode is set/released. Release the protect (page: 1, address: 00, data: 01), before setting the data.

Page D	Address 01

Data	Function
00	Normal
01	Test mode 1 Various emergency inhibition and release Drum, capstan, loading motor, reel, tape top, end, DEW SP/LP automatic distinction inhibition, manual switchover 5 minutes pause release inhibition Power off inhibition • release by battery end
02	Test mode 2 1'CH frequency response adjustment (Not used) SP/LP automatic distinction inhibition, manual switchover
03	Test mode 3 Track shift Plays back the track shift Rear lock distinction inhibition during PB SP/LP automatic distinction inhibition, manual switchover
04	Test mode 4 Rear lock mode Rear lock playback is performed SP/LP automatic distinction inhibition, manual switchover
05	Test mode 5 SP/LP automatic distinction inhibition, manual switchover

※ This address data will be recorded on the non-volatile memory by pressing the PAUSE button on the adjusting remote control unit. Take note, as when this happens, the test mode will not be released even if the main power is turned off (6.3 Vdc).

※ Be sure to return the data of this address data to 00 after completing adjustments/repairs.

6. Emergency code

Troubles (errors) can be checked.

Page D	Address 06

First emergency code

……The first error code generated

Page D	Address 07

Last emergency code

…… The last error code generated (this data will be modified each time an error occurs.)

※ Be sure to rewrite the data of addresses 06 and 07 to 00 after completing repairs/adjustments.

※ When rewriting data, be sure to press the PAUSE button of the remote control unit after resetting the data.

Code	Error condition
00	No error
01	Loading motor error
02	Reel error during unloading
03	Other reel errors
04	Capstan error
05	DRUM FG error during drum start up
06	DRUM PG error during drum start up
07	DRUM FG error during drum regular condition
08	DRUM PG error during drum regular condition
09	DRUM Phase error during drum regular

7. Emergency mode

The operation mode during an error outbreak can be checked.

Page D	Address 08

First emergency mode
······The operation mode when the first error is generated

Page D	Address 09

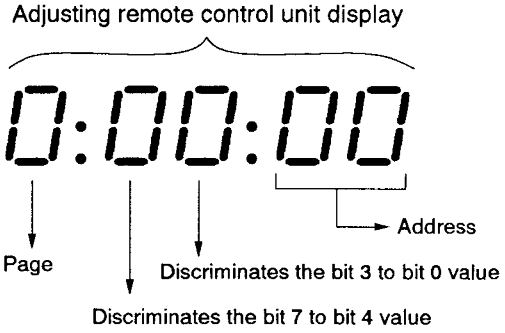
Last emergency mode
······The operation mode when the last error is generated
(This data will be modified each time an error occurs.)

※ Be sure to rewrite the data of addresses 08 and 09 to 00 after completing repairs/adjustments.
※ When rewriting data, be sure to press the PAUSE button of the remote control unit after setting the data.
※ Addresses 08 and 09 of page 0 and addresses 08 and 09 of page D have the same functions.

Code	Error condition
00	BEFOR INITIALIZE
01	EJECTED
02	NORMAL STOP
03	FF
04	NORMAL REC
06	NORMAL PB
07	PB PAUSE
12	LOADING
14	REC PAUSE
26	X1
27	1/5 SLOW
31	UNLOADING
36	-X1
37	-1/5 SLOW
46	CUE
47	1/10 SLOW
56	REVIEW
57	-1/10 SLOW
62	STOP TAPE END
66	X2
67	FRAME
72	STOP TAPE TOP
76	-X2
77	-FRAME
83	REWIND
85	REC REVIEW(+)
95	REC REVIEW(-)
A2	EMERGENCY STOP
A5	EDIT SEARCH(+)
B1	EMERGENCY UNLOADING
B2	STOP EMERGENCY 1
B5	EDIT SEARCH(-)
C2	STOP EMERGENCY 2
E2	STOP NO CASSETTE
F5	EDIT PAUSE

8. Bit value Discrimination

It is necessary to discriminate the bit value by the adjusting remote control unit display data for the following items. Discriminate if the bit value is "1" or "0" using the following table.


Adjusting remote control unit display
0:00:00
Address
Page
Discriminates the bit 3 to bit 0 value
Discriminates the bit 7 to bit 4 value

Remote Control Unit Display	Bit Value			
	bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
Ⓐ→ 8	1	0	0	0
9	1	0	0	1
A (A)	1	0	1	0
B (b)	1	0	1	1
C (c)	1	1	0	0
D (d)	1	1	0	1
Ⓑ→ E (E)	1	1	1	0
F (F)	1	1	1	1

(Example) When the remote control unit display data is "8E", the bit values of bit 7 to bit 4 can be discriminated from column Ⓐ, and that of bit 3 to bit 0 can be discriminated from column Ⓑ.

9. Check of Tape Distinction Switch, etc.

Page 2	Address E9

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
			$\overline{\text{CC DOWN}}$	$\overline{\text{REC PROOF}}$	ME/$\overline{\text{MP}}$		

"1"=ME tape
"0"=MP tape

"1"=Recording impossible
"0"=Recording possible

"0"=During cassette compartment lock

Page 1	Address 3D

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
V MUTE	A MUTE	VA PB MODE	JOG	PB CLOG	REC CLOG	SYNC DET	LP/$\overline{\text{SP}}$

"1"=LP mode playback
"0"=SP mode playback

"1"=SYNC is detected
"0"=SYNC is not detected

"1"=CLOG is detected
"0"=Normal

"1"=When the PB RF signals are being playback normaly
"0"=Others

"1"=JOG mode
"0"=Other

"1"=Playback mode
"0"=Others

"1"=AUDIO MUTE: ON
"0"=AUDIO MUTE: OFF

"1"=VIDEO MUTE: ON
"0"=VIDEO MUTE: OFF

Page 1	Address 42

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
						DEW	

"0"=Dew outbreak
"1"=Others

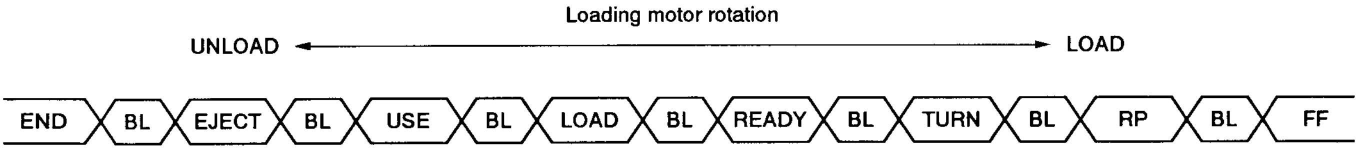
10. Mode Switch Check

The mode switch position (mechanical section condition) can be checked.

Page 2	Address E9

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
MSW 0	MSW 1	MSW 2	$\overline{\text{CC DOWN}}$				

			POSITION	FUNCTION	$\overline{\text{CC DOWN}}$
1	1	1	BL	Interval of each position	
0	1	1	END	FULL END processing (T side lock removal)	1
0	0	1	EJECT	Cassette compartment ejection	1
1	0	1	USE	EJECTED (Unskate end)	1
0	0	1	LOAD	LOADING (Skate in)	0
1	0	0	READY	NORMAL STOP position	0
1	1	0	TURN	OFF of pinch roller only with PB ↔ REV (oscillating position)	0
0	1	0	RP	PB, REC, RVS, REV, REW	0
0	0	0	FF	FF/CUE	0


Loading motor rotation
UNLOAD
LOAD
END
BL
EJECT
BL
USE
BL
LOAD
BL
READY
BL
TURN
BL
RP
BL
FF

11. Mechanism Control A/D Port Input Voltage Check

Page 4	Address 14

Checking method:

1) Set data: 02 to page: 4, address: 0E.
   (A/D conversion processing active)
2) Set the data in the following table to page: 4, address: 13, and select the A/D port to be displayed.

Data	A/D Port
00	Pin (62): AN0 (T REEL FG)
01	Pin (61): AN1 (S REEL FG)
02	Pin (60): AN2 (ATF ERROR)
03	Pin (59): AN3 (BATT SENS)
04	Pin (58): AN4 ($\overline{\text{DEW}}$)

3) Check the data of page: 4, address: 14.

Adjusting Remote Control Unit Display Data	A/D Port Input Voltage
FF to 00	Approx. 5 Vdc to 0 Vdc

12. Tape Top/End Sensor Condition Check

Page 4	Address 0A

Checking method:

1) Set data: 10 to page: 4, address: 0E.
   (Tape top/end sensor condition sampling processing active)
2) Check the data of page: 4, address: 0A.

Adjusting Remote Control Unit Display Data	Tape Top/End Sensor Condition
0 0	Tape present (Middle of tape)
0 1	Tape end
1 0	Tape top
1 1	No tape

Tape end sensor condition
Tape top sensor condition

"0"=Non-active (Not receiving light)
"1"=Active (Receiving light)

13. Battery Voltage Check

Page 4	Address 10

Adjusting Remote Control Unit Display Data	Battery Voltage
FF	Approx. 10 Vdc
F0	Approx. 9.4Vdc
E0	Approx. 8.8Vdc
D0	Approx. 8.2Vdc
C0	Approx. 7.5Vdc
B0	Approx. 6.9Vdc
A0	Approx. 6.3Vdc
90	Approx. 5.6Vdc
80	Approx. 5.0Vdc

14. Individual Operations of the Drum, Capstan, and Loading Motor

Page 4	Address 11

1) Adjust the mechanical section to the loading completion condition.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Set data: 01 to page: 4, address: 0E.
   (Control permission from the adjusting remote control unit of the motor)
4) By setting the data in the following table to page: 4, address: 11, the corresponding motors can be operated individually.
5) After checking the operations, turn off the main power (6.3 Vdc).

Data	Operation
00	Normal
02	Drum forward rotation
04	Drum reverse rotation
06	Capstan forward rotation
08	Capstan reverse rotation
0A	Loading motor forward rotation
0C	Loading motor reverse rotation
01	All motors stop
03	
05	
07	
09	
0B	
0D	
0F	

15. Mode control micro processor key matrix check

The key input can be checked.

Page 1	Address 68~6D

	Bit7	Bit6 (K IN 6)	Bit5 (K IN 5)	Bit4 (K IN 4)	Bit3 (K IN 3)	Bit2 (K IN 2)	Bit1 (K IN 1)	Bit0 (K IN 0)
Address 68 (K OUT 0)		LENS COVER OPEN (MF-191 S973)	VTR POWER (VK-27 S977)	EDIT SEARCH (CUE) (VK-27 S981)	PAUSE (VK-27 S984)	EDIT SEARCH (+) (VK-27 S981)	EJECT (DD-48 S901)	
Address 69 (K OUT 1)		BUZZER ON/OFF (ED-35 S986)	CAMERA POWER (VK-27 S977 SW-205 S519)	FF (VK-27 S983)	PLAY (VK-27 S980)	REW (VK-27 S979)	STOP (VK-27 S976)	
Address 6A (K OUT 2)		NIGHT (CF-32 S997)			EDIT SEARCH (REV) (VK-27 S978)	EDIT SEARCH (–) (VK-27 S978)	COUNTER RESET (CF-32 S995)	SP/LP EDIT ON/OFF (ED-35 S990)
Address 6B (K OUT 3)		PORTREIT (CF-32 S997)			TIME (CF-32 S996)	DATE (CF-32 S993)		
Address 6C (K OUT 4)		SPORTS (CF-32 S997)		AUTO FOCUS ON/OFF (MF-191 S971)				
Address 6D (K OUT 5)		HIGH SPEED SHUTTER (CF-32 S997)	AREA (ED-35 S989)	DST or SUMMER TIME (ED-35 S987)		FADER (CF-32 S991)	START/ STOP (SW-205 S520)	REMOTE COMMANDER (ED-35 S988)

"1"=key switch ON
"0"=key switch OFF

16. Wireless Remote Control Unit Reception Content Check

Page 1	Address 1E

Wireless remote control unit key pressed	Data
None	FF
TELE	9A
WIDE	9B
Start/stop	99
Rewind	1B
Fast forward	1C
Stop	18
Playback	1A
Data screen	5A
Pause	19
SLOW	23

17. EDIT Switch, Remote Commander Switch Check

Page 1	Address 0A

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
REC MODE (SP/LP)	REMOTE COMMANDER		EDIT				

"1"=OFF
"0"=ON

"1"=EDIT ON
"0"=EDIT OFF

"1"=LP
"0"=SP

18. White Balance Mode and Focus Mode Display/Switchover

Page 1	Address 9A

The mode can be switched when the data of page: 1, address: A3 is set to 04.

Data	White Balance Mode
* 1	INDOOR
* 2	OUTDOOR
* 3	HOLD
* 6	AUTO

Data	Focus Mode
0 *	Manual
1 *	Automatic

* : 0 to F

19. LCD, LED Check, etc.

Page 1	Address A3

Data	Mode
00	Normal
01	Key input prohibited
04	Camera function renewal prohibited

20. Page D Address List

Note 1: The adjustment data initial value is the data to be input before performing video section adjustment (page D), when the page D data has been erased due to some cause.

Note 2: The data listed in the adjustment data memo column are the fixed data.
Check that these data have not been accidentally rewritten, after completing adjustments.

*1 No mark : AEP, UK model
[ ] : E, Australian model

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
00	Category code	Not used		
01	Test mode		00	00
02	Destination flag		8E[AE]*1	8E[AE]*1
03	BATT END	Battery end adjustment	8C	
04	SW POSITION	SW POSITION adjustment	00	
05	SW POSITION	SW POSITION adjustment	0A	
06	EMERGENCY code (FIRST)	Error code and mode are memorized. Rewrite the data of these addresses to 00 after repairs/adjustments	00	00
07	EMERGENCY code (LAST)		00	00
08	EMERGENCY mode (FIRST)		00	00
09	EMERGENCY mode (LAST)		00	00
0A	SR DATA (MP Normal SP)	CXA1207 serial data	24	24
0B	SR DATA (MP Normal LP)	CXA1207 serial data	16	16
0C	SR DATA (ME Hi8 SP)	CXA1207 serial data	24	24
0D	SR DATA (ME Hi8 LP)	CXA1207 serial data	16	16
0E	SR DATA (ME Normal SP)	CXA1207 serial data	24	24
0F	SR DATA (ME Normal LP)	CXA1207 serial data	16	16
10	SR DATA (MP Hi8 SP)	CXA1207 serial data	24	24
11	SR DATA (MP Hi8 LP)	CXA1207 serial data	16	16
12	SR DATA (EDIT ON Normal)	CXA1207 serial data	16	16
13	SR DATA (EDIT ON Hi8)	CXA1207 serial data	16	16
14	CAM TITLE BLU R-Y	Camera titler color adjustment [Blue]. Not used		
15	CAM TITLE BLU B-Y	Camera titler color adjustment [Blue]. Not used		
16	CAM TITLE GRN R-Y	Camera titler color adjustment [Green]. Not used		
17	CAM TITLE GRN B-Y	Camera titler color adjustment [Green]. Not used		
18	CAM TITLE CYN R-Y	Camera titler color adjustment [Light blue]. Not used		
19	CAM TITLE CYN B-Y	Camera titler color adjustment [Light blue]. Not used		
1A	CAM TITLE RED R-Y	Camera titler color adjustment [Red]. Not used		
1B	CAM TITLE RED B-Y	Camera titler color adjustment [Red]. Not used		
1C	CAM TITLE VIO R-Y	Camera titler color adjustment [Violet]. Not used		
1D	CAM TITLE VIO B-Y	Camera titler color adjustment [Violet]. Not used		
1E	CAM TITLE YEL R-Y	Camera titler color adjustment [Yellow]. Not used		
1F	CAM TITLE YEL B-Y	Camera titler color adjustment [Yellow]. Not used		
20	Permission plug		04	04
21	Adjustment plug	FORCED VTR ON, CAM ON etc DATA: MODE 01: FORCED CAMERA POWER ON 02: FORCED VTR POWER ON	00	00
22~29		Not used		

Table 9-2 (1).

Address	Name	Function [ ] indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
2A	SLOW ADJ (FOWARD)		00	00
2B	SLOW ADJ (REVERSE)		00	00
2C	STILL ADJ		00	00
2D	BATT REMAIN LEVEL 1	Amount of remaining battery 1	A0	
2E	BATT REMAIN LEVEL 2	Amount of remaining battery 2	99	
2F	BATT REMAIN LEVEL 3	Amount of remaining battery 3	94	
30~42		Not used		
43	1-ch M.T NORMAL	1 ch playback frequency characteristic adjustment [IC158 ②]	C0	
44				
45	2-ch M.T NORMAL	2 ch playback frequency characteristic adjustment [IC158 ③]	C0	
46	REC C RF (EE)	REC C RF level adjustment (EE) [IC156 ⑩]	B8	
47	REC C RF (PB)	REC C RF level adjustment (PB) [IC156 ⑩]	00	00
48	RF CONT (ME)	ATF RF level (ME) [IC158 ⑤]	64	64
49	RF CONT (MP)	ATF RF level (MP) [IC158 ⑤]	70	70
4A	EE LEVEL	EE level adjustment [IC156 ⑮]	70	70
4B		Not used		
4C	COMB ADJ	Chroma comb filter adjustment [IC156 ③]	A8	
4D	SR-IR	IR adjustment [IC156 ②]	AE	
4E	Y-FM CARRIER (Hi8)			
4F	Y-FM CARRIER (NORMAL)	Y-FM carrier frequency adjustment [IC156 ⑤]	A8	
50	Y-FM DEVIATION (Hi8)			
51	Y-FM DEVIATION (NORMAL)	Y-FM deviation adjustment [IC156 ⑥]	95	
52	REC Y LEVEL (EE Hi8 ME)			
53	REC Y LEVEL (EE Hi8 MP)			
54	REC Y LEVEL (EE NOR ME)	REC Y recording current adjustment (ME) [IC156 ⑦]	95	
55	REC Y LEVEL (EE NOR MP)	REC Y recording current adjustment (MP) [IC156 ⑦]	95	
56	REC Y LEVEL (PB)	Playback REC Y level [IC156 ⑦]	00	00
57	PB Y LEVEL (EE)	EE PB Y level [IC158 ⑮]	00	00
58	PB Y LEVEL (Hi8)			
59	PB Y LEVEL (NORMAL)	Normal PB Y level adjustment [IC158 ⑮]	B0	
5A	EMPHASIS INPUT LEVEL	EE emphasis input level adjustment [IC156 ④]	A5	
5B	PB LINE LEVEL	Playback emphasis input level adjustment [IC156 ④]	AF	
5C~79		Not used		
7A	1.5 IR	1.5 MHz IR adjustment [IC158 ⑥]	A0	
7B	1.5 DEV	1.5 MHz deviation adjustment [IC158 ⑦]	A0	
7C~FF		Not used		

Table 9-2 (2)

9-2. POWER SYSTEM ADJUSTMENTS

1. Oscillator Frequency Check (DD-48 board)

Mode	Camera record
Subject	Arbitrary
Measurement Point	Q903 collector
Measuring Instrument	Frequency counter
Specified Value	510 ± 35 kHz

Adjusting method:

1) Check that the oscillator frequency satisfies the specified value.

2. Power Voltage Check (DD-48 board)

Mode	Camera record
Subject	Arbitrary
Measuring Instrument	Digital voltmeter
EVF 5V check	
Measurement Point	Pin ⑪ of CN901
Specified Value	4.93 ± 0.15 Vdc
D5V check	
Measurement Point	Pins ⑤ and ⑧ of CN901
Specified Value	4.92 ± 0.15 Vdc
D4V check	
Measurement Point	Pin ④ of CN901
Specified Value	3.98 ± 0.15 Vdc
VID 5V check	
Measurement Point	Pins ⑰, ⑳ of CN901
Specified Value	4.90 ± 0.10 Vdc
RP 5V check	
Measurement Point	Pin ㉒ of CN901
Specified Value	4.89 ± 0.15 Vdc
AU5V check	
Measurement Point	Pin ⑲ of CN901
Specified Value	4.90 ± 0.15 Vdc
CAM5V check	
Measurement Point	Pins ⑦ and ⑩ of CN901
Specified Value	$4.86^{+0.15}_{-0.11}$ Vdc
CAM15V check	
Measurement Point	Pin ⑫ of CN901
Specified Value	15.05 ± 0.4 Vdc
CAM −9V check	
Measurement Point	Pin ⑨ of CN901
Specified Value	−8.5 ± 0.4 Vdc

9-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Page D Initial Value Input

If the page D data has been erased due to some cause, input the page D initial value before performing adjustments. For details on the initial value, refer to “Page D address list” in “9-1-8. Service Mode”.

Mode	E-E
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	00 to 7D

Input method:

1) Release the write protect.
   Page: 1, address: 00, data: 01
2) Select page D, and input the initial value to each address. (After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote control unit before changing the address.)

2. Battery End Adjustment

Mode	Camera record
Signal	Arbitrary
Measurement Point	LCD display of the adjusting remote control unit
Measuring Instrument	
Adjustment Page	D
Specified Value	03 (BATT END) 2D (BATT REMAIN LEVEL 1) 2E (BATT REMAIN LEVEL 2) 2F (BATT REMAIN LEVEL 3)

Connection:

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-4.

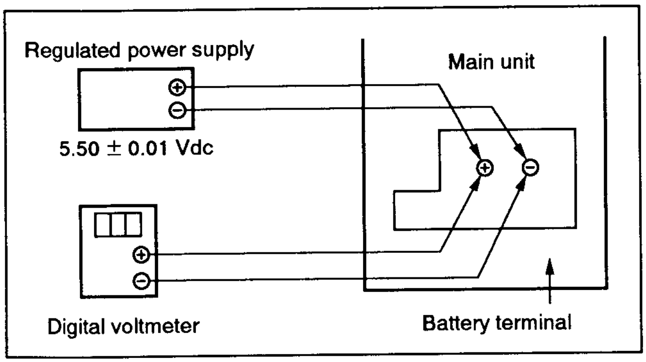


Fig. 9-4.

Adjusting method:

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.3 ± 0.1 Vdc.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Set data: 01 to page: D, address: 01.
   (Test mode 1 setting)
4) Set to the camera recording mode.
5) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 5.50 ± 0.01 Vdc.
6) Select page: 4, address: 10, read the adjusting remote control unit display data, and set to DEND.
7) Set data DEND to page: D, address: 03, and press the PAUSE button of the adjusting remote control unit.
8) Convert DEND to decimal to obtain DEND´. (Refer to Table 7-6. "Hexadecimal notation – decimal notation conversion table")
9) Obtain the adjustment data (decimal) by following formula (decimal notation calculation), convert to hexadecimal and enter the data into each adjustment address.
   Address: 2D D2D´=DEND´+18
   Address: 2E D2E´=DEND´+14
   Address: 2F D2F´=DEND´+8
   Note: After setting the data, be sure to press the PAUSE button of the adjusting remote control unit before changing the address.
10) Set data: 00 to page: D, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (Test mode 1 release)
11) Perform "Battery Down Check".

3. Battery Down Check

Mode	Camera record
Subject	Arbitrary

Connection

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-4.

Checking method:

Remove the adjusting remote control unit, and perform the following check. If the check is not satisfied, perform from the beginning again.

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 6.3 ± 0.1 Vdc.
2) Set to the camera recording mode.
3) Decrease the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.70 ± 0.01 Vdc.
4) Check that the 🔋 mark on the EVF (viewfinder) display is not lighted up. (TALLY lamp lights up).
5) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.58 ± 0.01 Vdc.
6) Check that the 🔋 mark and the TALLY lamp on the EVF display on the EVF display blinks every second.
7) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.42 ± 0.01 Vdc.
8) Check that the 🔋 mark and the TALLY lamp on the EVF display are blinking faster, the VTR stops and the power supply turns off.

9-4. SERVO SYSTEM ADJUSTMENTS

1. Switching Position Adjustment (VS-95 board)

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1CP)
Measurement Point	CH1: Pin ④ of CN002 (RF SWP) CH2: Pin ③ of CN002 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	04 (SW POSITION) 05 (SW POSITION)
Specified Value	$t_1=0 \pm 10$ μsec

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Set data: 0A to page: D, address: 05.
3) Change the data of page: D, address: 05 and minimize "t_1". (Coarse adjustment)
4) Press the PAUSE button of the remote control unit.
5) Change the data of page: D, address: 04, and adjust so that the switching position (t_1) becomes the specified value. (Fine adjustment)
6) Press the PAUSE button of the adjusting remote control unit.

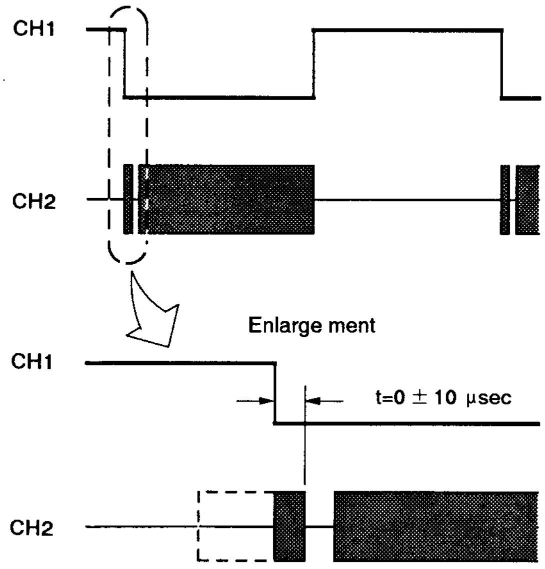


Fig. 9-5.

9-5. VIDEO ADJUSTMENTS

The adjustments of the video system must be performed according to the following adjustment procedure.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Fig. 9-2.

[Adjusting procedure]

1) Playback frequency characteristic adjustment
2) Flying erase check
3) VXO oscillation frequency check
4) EE level adjustment
5) IR adjustment
6) Y/C separation adjustment
7) Emphasis input level adjustment
8) PB Y level adjustment
9) PB LINE OUT level adjustment
10) Y FM carrier frequency adjustment
11) Y FM deviation adjustment
12) Chroma emphasis f_0 adjustment
13) REC Y level adjustment
14) REC C level adjustment
15) REC ATF level check
16) REC AFM level check

1. Playback Frequency Characteristic Adjustment (VS-95 board)

Note 1: The adjusting element for CH2 is shown in parentheses [ ].

Mode	Playback
Signal	Alignment tape: For frequency characteristic adjustment (WR5-6C)
Measurement Point	CH1: Pin ③ of CN002 EXT TRIG: Pin ④ of CN002
Measuring Instrument	Oscilloscope TRIG SLOPE: +, [–]
Adjustment Page	D
Adjustment Address	43 (MT 1CH) [45 (MT 2CH)]
Specified Value	3.58 MHz level: 5.5 MHz level= 4: (3 ± 0.3)

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) After memorizing the data of page: D, address: 05, set data: 10.
3) Press the PAUSE button of the adjusting remote control unit.
4) Change the data of address: 43 [45] of page D, and adjust the level ratio of 3.58 MHz and 5.5 MHz of PB RF output waveform to the specified value.
   Note 2: After each address adjustment, be sure to press the PAUSE button of the adjusting remote control unit and memorize the data.
5) Set the data memorized at step 2) to page: D, address: 05, and press the PAUSE button of the adjusting remote control unit.

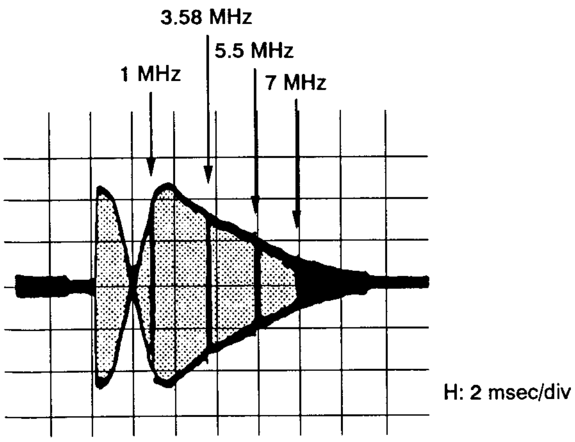


Fig. 9-6.

2. Flying Erase Check (VS-95 board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ② of W001 (FE (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: approx. 7.5 MHz Voltage: Above 1.5 Vp-p

Note: Use a MP type tape.

Checking method:

1) Check that the oscillation frequency is approx. 7.5 MHz and that the oscillation voltage is above 1.5 Vp-p.

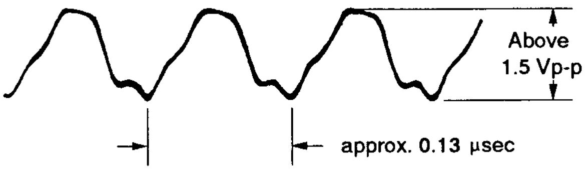


Fig. 9-7.

3. VXO Oscillation Frequency Check (VS-95 board)

Mode	STOP
Signal	Color bar
Measurement Point	Pin ⑫ of IC152
Measuring Instrument	Frequency counter
Specified Value	4433618 ± 70 Hz

Note: Connect the frequency counter via a high impedance (approximately 10 MΩ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of pin ⑫ of IC152 is 4433618 ± 70 Hz.

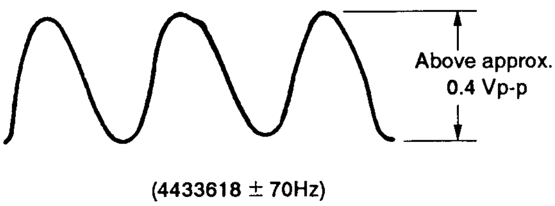


Fig. 9-8.

4. EE Level Adjustment (VS-95 board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ② of CN101 (VIDEO OUT)[Note]
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4A (EE LEVEL)
Specified Value	A=1.00 ± 0.025V

Note: Terminate pin ② of CN101 at 75 Ω.
After completing adjustments, remove the 75 Ω resistor.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

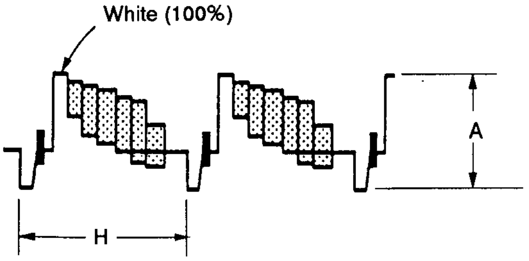


Fig. 9-9.

5. IR Adjustment (VS-95 board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ⑦ of IC151 (Y COMB OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4D (SR IR)
Specified Value	Residual chroma component (A) is minimum (below 80 mVp-p)

Connection

1) Connect pin ⑭ of IC151 (VREF: 3.5 Vdc) or pin ② of IC159 to pin (51) of IC151 with a jumper wire.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4D, and adjust so that the residual chroma component (A) becomes minimum.
3) Press the PAUSE button of the adjusting remote control unit.

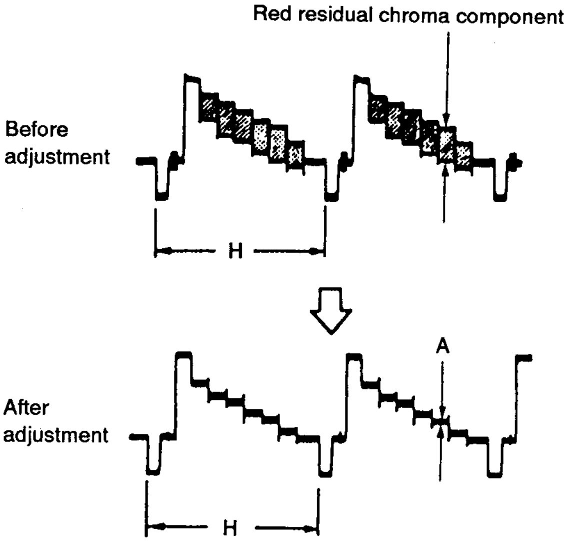


Fig. 9-10.

6. Y/C Separation Adjustment (VS-95 board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ⑪ of IC151 (C+CD)
Adjusting Element	Oscilloscope
Measuring Instrument	RV051 (Phase)
Adjustment Page	D
Adjustment Address	4C (Y/C SEP DL LEVEL)
Specified Value	Residual chroma component (A) is minimum.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4C, and adjust the residual chroma component to minimum.
3) Adjust RV051 so that the residual chroma component (A) becomes minimum.
5) Press the PAUSE button of the adjusting remote control unit.

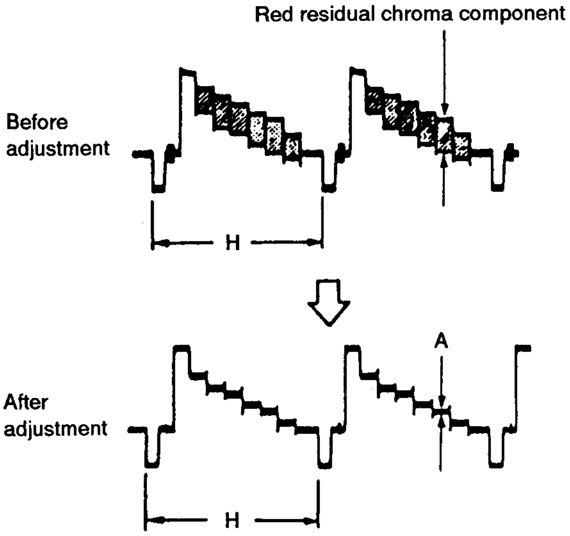


Fig. 9-11.

7. Emphasis Input Level Adjustment (VS-95 board)

Mode	E-E
Signal	Color bar without burst signal
Measurement Point	Pin ③ of IC155 (or Pin ③ of IC151)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5A (EMPHASIS INPUT LEVEL)
Specified Value	A=0.50 ± 0.025V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

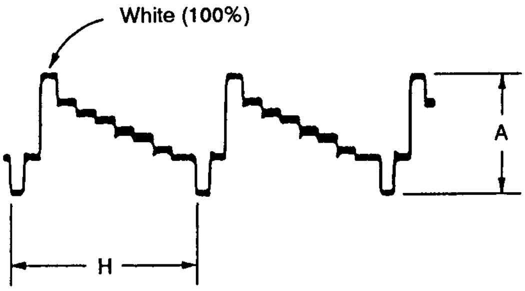


Fig. 9-12.

8. PB Y Level Adjustment (VS-95 board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Color bar section
Measurement Point	Pin ㉑ of IC151
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	• Normal mode 59 (NORMAL PB Y LEVEL)
Specified Value	A=0.50 ± 0.025V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Playback the color bar section of the normal mode alignment tape (WR5-5CSP).
3) Change the data of page: D, address: 59, and adjust so that the Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

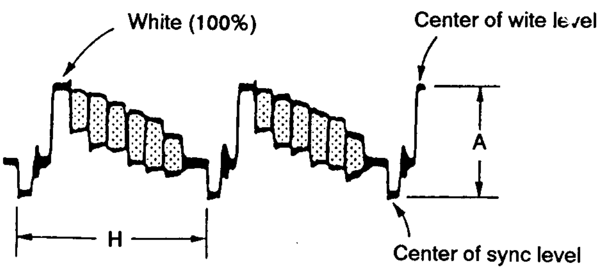


Fig. 9-13.

9. PB LINE OUT Level Adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Color bar section
Measurement Point	Video output terminal (terminated at 75 Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5B (PB LINE LEVEL)
Specified Value	A=1.0 ± 0.025V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5B, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

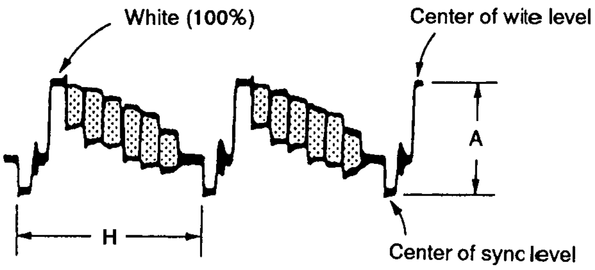


Fig. 9-14.

10. Y FM Carrier Frequency Adjustment (VS-95 board)

Mode	E-E
Signal	No signal
Measurement Point	Pin ⑤ of IC003 (REC Y RF OUT)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	4F (Y FM CARRIER)
Specified Value	4.38 ± 0.04 MHz

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4F, and adjust so that the Y FM carrier frequency becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.
4) Perform "Deviation Adjustment".

Pin ⑤ of IC003 waveform

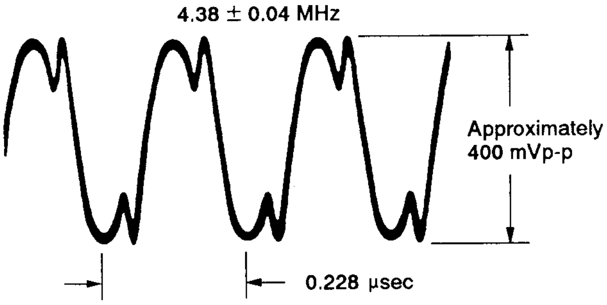


Fig. 9-15.

11. Deviation Adjustment (VS-95 board)

Mode	Record and playback
Signal	Color bar
Measurement Point	Pin ㉑ of IC151
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	51 (Y FM DEVIATION)
Specified Value	A=0.50 ± 0.025V

Note: Check that "Emphasis Input Level Adjustment", "PB Y Level Adjustment" and "Y FM Carrier Frequency Adjustment" have been completed.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback signal level (A).
   Specification:A=0.50 ± 0.025V
5) If the specification is not satisfied, change the data of page: D, address: 51, and repeat steps 2) to 4).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

6) Press the PAUSE button of the adjusting remote control unit.

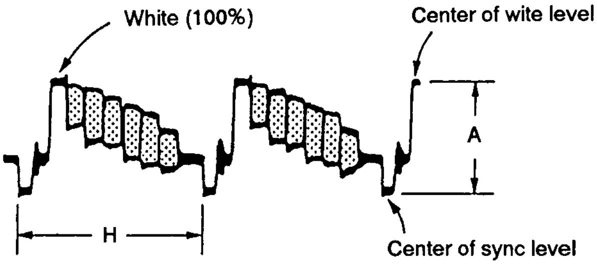


Fig. 9-16.

12. Chroma Emphasis fo Adjustment (VS-95 board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ㉔ of IC152
Measuring Instrument	Oscilloscope
Adjustment Element	FL153
Specified Value	Minimum fo component

Connection:

1) Connect pin ㉔ of IC152 to GND with a 3.3 kΩ resistor (1-249-423-11).

Adjusting method

1) Adjust FL153 so that the amplitude of the latter section of the chroma signal (yellow section) becomes minimum.

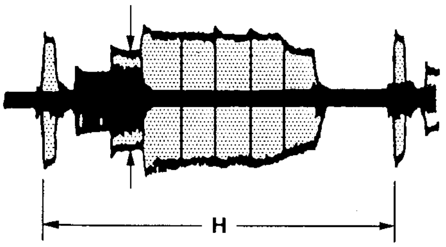

Minimize the amplitude of the latter section of the yellow section.

Fig. 9-17.

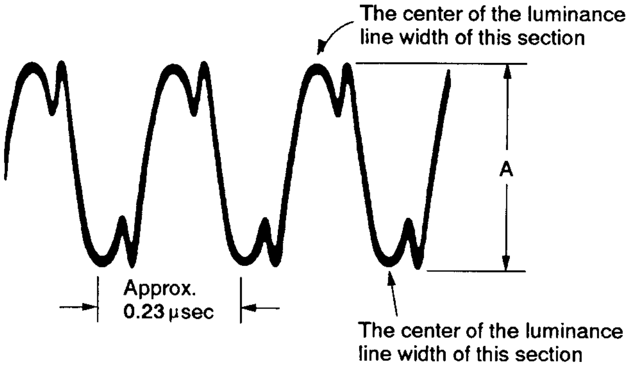
13. REC Y Level Adjustment (VS-95 board)

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ⑤ of IC003
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	55 (REC Y LEVEL EE NOR MP) 54 (REC Y LEVEL EE NOR ME)
Specified Value	A=205 ± 5 mVp-p

Note: Use a MP type tape.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 55, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.
4) Set the data of page: D, address: 55 to page: D, address: 54.
5) Press the PAUSE button of the adjusting remote control unit.


The center of the luminance line width of this section

The center of the luminance line width of this section

Fig. 9-18.

14. REC C Level Adjustment (VS-95 board)

Mode	Record (SP)
Signal	Color bar
Measurement Point	Pin ③ of IC003
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	46 (REC C RF (EE))
Specified Value	A=110 ± 10 mVp-p

Note: Use a MP type tape.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 46, and adjust so that the REC C level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

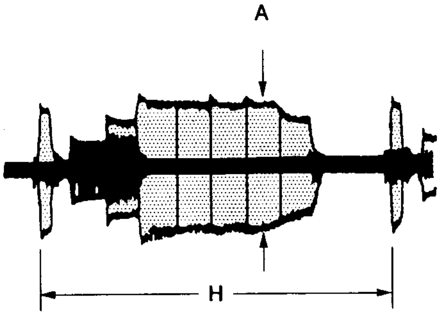


Fig. 9-19.

15. REC ATF Level Check (VS-95 board)

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ㉔ of IC001 (REC 1CH)
Measuring Instrument	Oscilloscope
Specified Value	A=8 ± 2 mVp-p

Note: Use a MP type tape.

Connection:

1) Remove the AU-138 board CN602.

Checking method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) To reduce the REC Y signal, set data: 00 to page: D, address: 55.
   Note: Don't press the PAUSE button of the adjusting remote control unit.
3) Check that the REC ATF signal level (A) satisfies the specified value.
4) Turn the main power supply (6.3V) off.

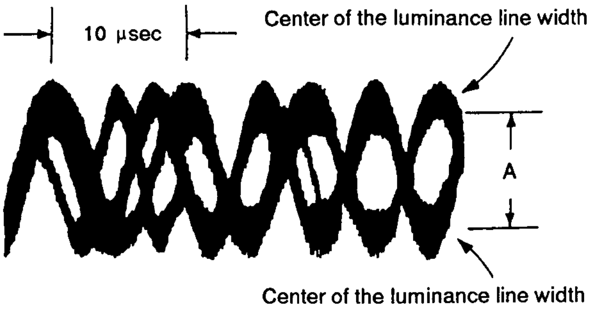


Fig. 9-20.

16. REC AFM Level Check (VS-95 board)

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ㉔ of IC001 (REC 1CH)
Measuring Instrument	Oscilloscope
Specified Value	A=9 ± 2 mVp-p

Note: Use a MP type tape.

Connection:

1) Connect Pin ⑨ of IC404 and GND with a 0.01 μF capacitor (1-101-004-00).

Checking method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) To reduce the REC Y signal, set data: 00 to page: D, address: 55.
   Note: Don't press the PAUSE button of the adjusting remote control unit.
3) Check that the REC AFM signal level (A) satisfies the specified value.
4) Turn the main power supply (6.3V) off.

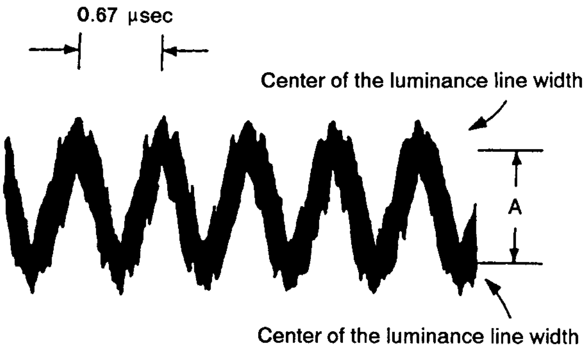
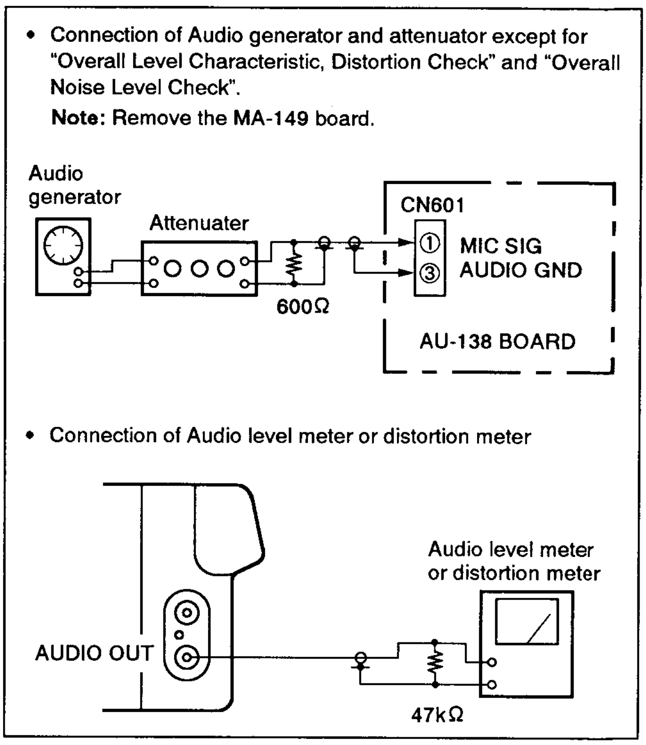


Fig. 9-21.

9-6. AUDIO SYSTEM ADJUSTMENT

- Perform the adjustment using the color bar signal as a video signal input.

[Connecting the measuring instruments for the audio]
Connect the audio system measuring instruments besides the video system measuring instruments as shown in Fig. 9-22, and perform adjustments with the power switch [player] position.



- Connection of Audio generator and attenuator except for "Overall Level Characteristic, Distortion Check" and "Overall Noise Level Check".
  Note: Remove the MA-149 board.

- Connection of Audio level meter or distortion meter

Fig. 9-22.

[Adjustment Procedure]

1) E-E output level check
2) IR adjustment
3) Deviation adjustment
4) Carrier frequency check
5) Recording level check
6) Overall level characteristics, distortion check
7) Overall noise level check

1. E-E Output Level Check (AU-138 board)

Mode	Record
Signal	400 Hz, -36.1 dBs, pin ① of CN601
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	-7.5 ± 2 dBs

Checking method:
1) Check that the 400 Hz signal level satisfies the specified value.

2. IR Adjustment (AU-138 board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP)
Measurement Point	+: Pin ⑥ of IC601 -: Pin ㊹ of IC601 (C629 ⊕)
Measuring Instrument	Digital voltmeter
Adjustment Page	D
Adjustment Address	7A (1.5 IR)
Specified Value	The DC voltage difference between pins ㊹ and ⑥ is 0 ± 10 mVdc

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7A and adjust so that the DC voltage becomes 0 ± 10 mVdc.
3) Press the PAUSE button of the adjusting remote control unit.

3. Deviation Adjustment

Mode	Playback
Signal	Alignment tape: For checking the operation (WR5-5CSP)
Measurement Point	Audio output terminal
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	7B (1.5 DEV)
Specified Value	-7.5 ± 0.5 dBs

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7B, and adjust so that the 400 Hz signal level becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

4. Carrier Frequency Check (AU-138 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ㉛ of CN602 (REC AFM)
Measuring Instrument	Frequency counter (Note 1)
Specified Value	1.500 ± 0.002 MHz

Note: Use a high impedance (above 1 MΩ) and low capacity (below 20 pF) probe.

Checking method:
1) Check that the 1.5 MHz carrier frequency satisfies the specified value.

5. Record Level Check (AU-138 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ㉛ of CN602 (REC AFM)
Measuring Instrument	Oscilloscope
Specified Value	A=48 ± 8 mVp-p

Checking method:
1) Check that the 1.5 MHz carrier level satisfies the specified value.
   (Read the center of the luminance line width and note down the level read.)

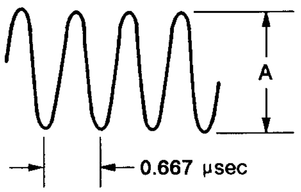


Fig. 9-23.

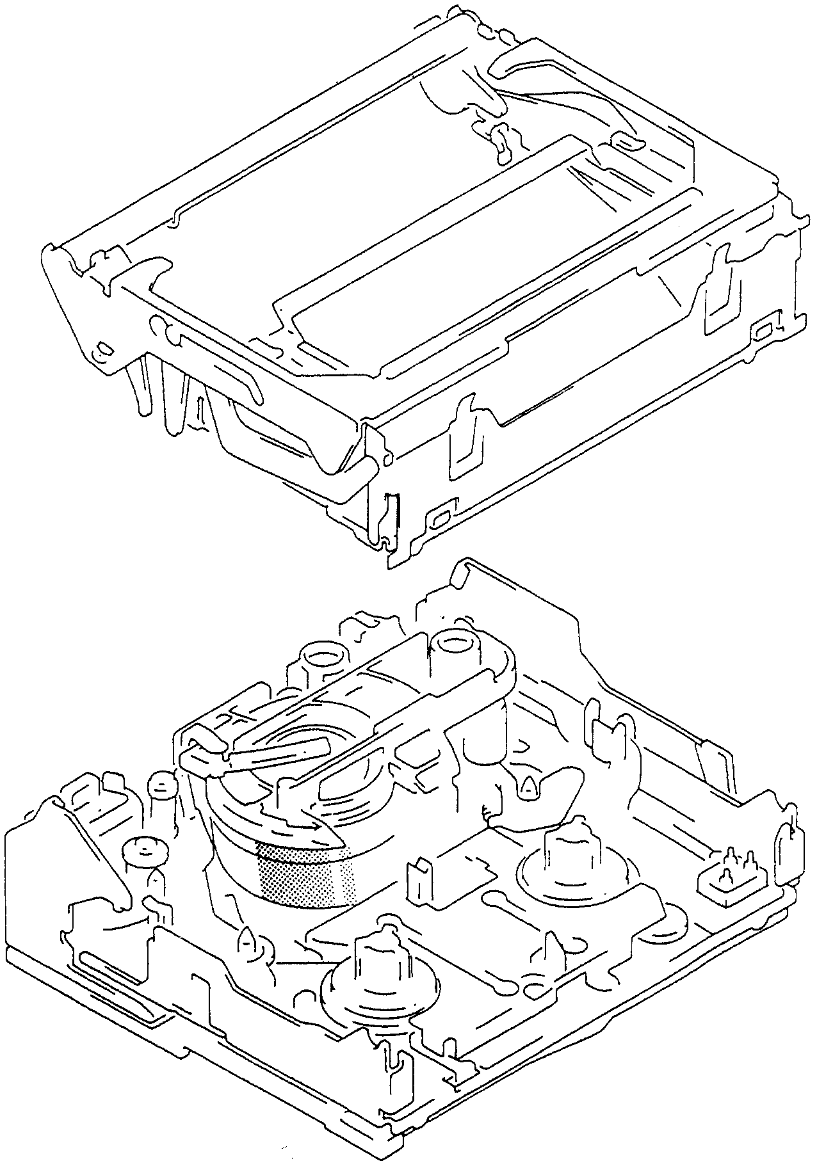
8 mm Video MECHANICAL ADJUSTMENT MANUAL IV

V12995

A MECHANISM

Video 8

File with the SERVICE MANUAL



8 VIDEO RECORDER

SONY®

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1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.
Mechanical adjustment is done in the [USE] mode. (To select the [USE] mode, refer to "1-3, Handling of Mode Selector".)

1-1. CASSETTE COMPARTMENT ASSEMBLY

1. Removal (Fig. 1)

1) Select the [USE] mode.
2) Push the part ⓐ of lock arm ❶ toward the arrow 🅐 to unlock from lock guide ❷, and raise the cassette compartment as shown in Fig. a.
3) Remove two screws ❸ and remove the LS frame ❹ toward the arrow 🅑.
4) With the cassette compartment assembly ❺ pushed in arrow 🅒 direction, distort tabs ⓑ and ⓒ of MD side plate toward the arrow 🅓 to disengage from catches ⓓ and ⓔ of cassette compartment assembly respectively.
   In such a case, insert a screwdriver between MD side plate and catch and disengage the tab ⓑ first, then disengage the tab ⓒ for easy removal as shown in Fig. b.
5) Raise the cassette compartment assembly ❺ in the opposite direction of arrow 🅒 until the shafts ⓕ and ⓖ are disengaged, and push left and right side plates toward arrow 🅓 to remove the cassette compartment assembly.

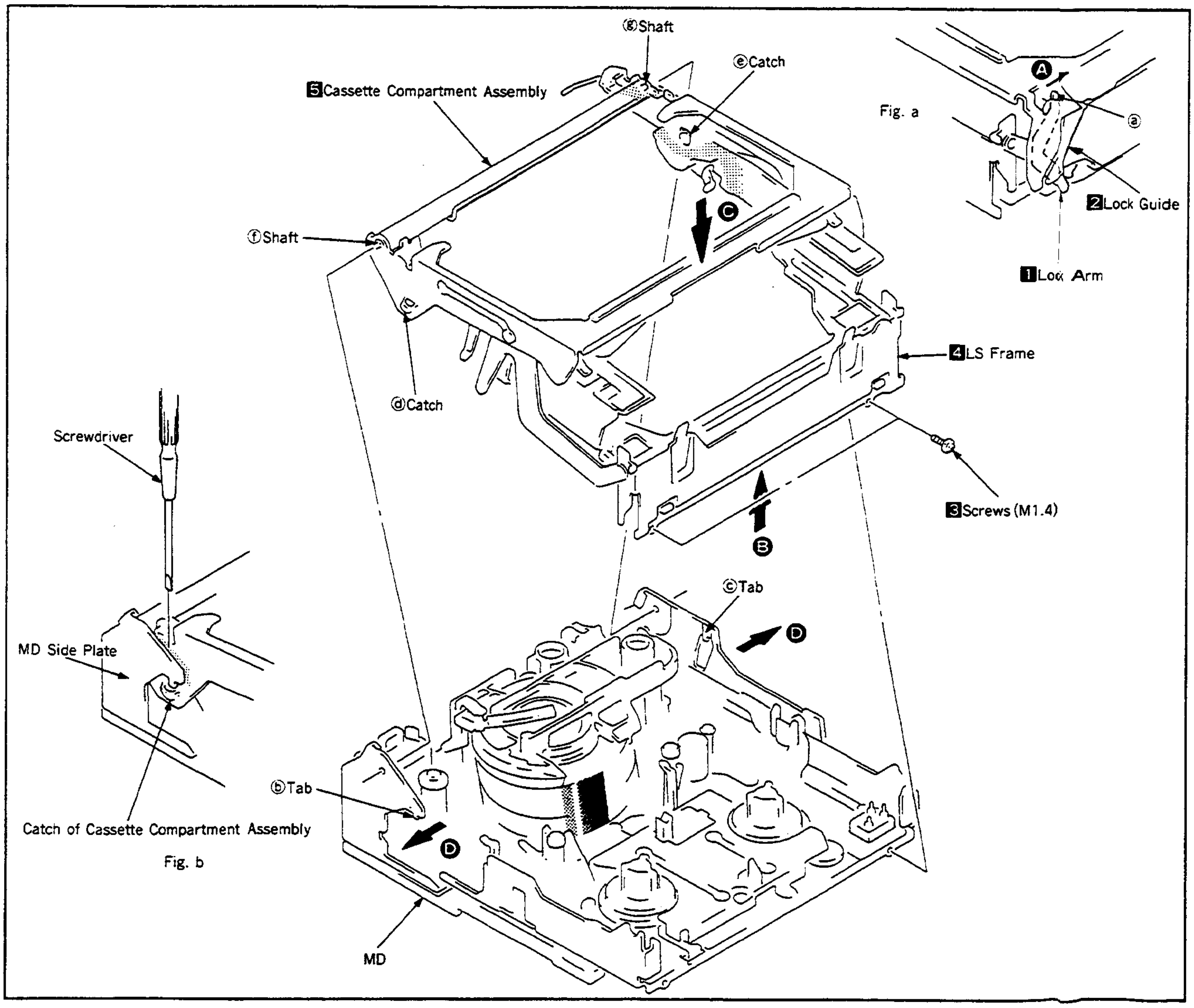

ⓖShaft
ⓔCatch
❺Cassette Compartment Assembly
Fig. a
🅐
ⓐ
❷Lock Guide
❶Lock Arm
🅒
ⓕShaft
❹LS Frame
ⓓCatch
Screwdriver
❸Screws (M1.4)
🅑
ⓒTab
🅓
MD Side Plate
ⓑTab
Catch of Cassette Compartment Assembly
Fig. b
🅓
MD

Fig. 1

2. Mounting (Fig. 2)

1) Select the USE mode.
2) Draw the cassette holder ❻ of cassette compartment assembly ❺ toward the arrow 🅔, and lower the LS frame ❹ toward the arrow 🅕.
3) With the cassette compartment assembly ❺ tilted by about 45° against MD, insert shafts ⓕ and ⓖ of cassette compartment assembly into holes ⓗ and ⓘ of MD side plate respectively.
   At this time, the part ⓙ of torsion bar must be positioned on the side ⓚ of LS flexible board (FP-443) (not on the side ⓛ), as shown in Fig. c.
4) Holding holes ⓗ and ⓘ of MD side plate, press the cassette compartment assembly ❺ so that its catches ⓓ and ⓔ are engaged with tabs ⓑ and ⓒ of MD side plate. In such a case, the lock arm ❶ of cassette compartment assembly must be inserted into a groove in the guide rail ❼ on the MD side plate as shown in Fig. d.
5) Insert left and right side plates ⓜ and ⓝ of LS frame ❹ inside the LS chassis ❽.
6) Push down the cassette compartment to lock.

Note : Make sure that the shafts ⓕ, ⓖ and the tabs ⓞ, ⓟ are set in the MD side plate properly.

7) Tighten two screws ❸.

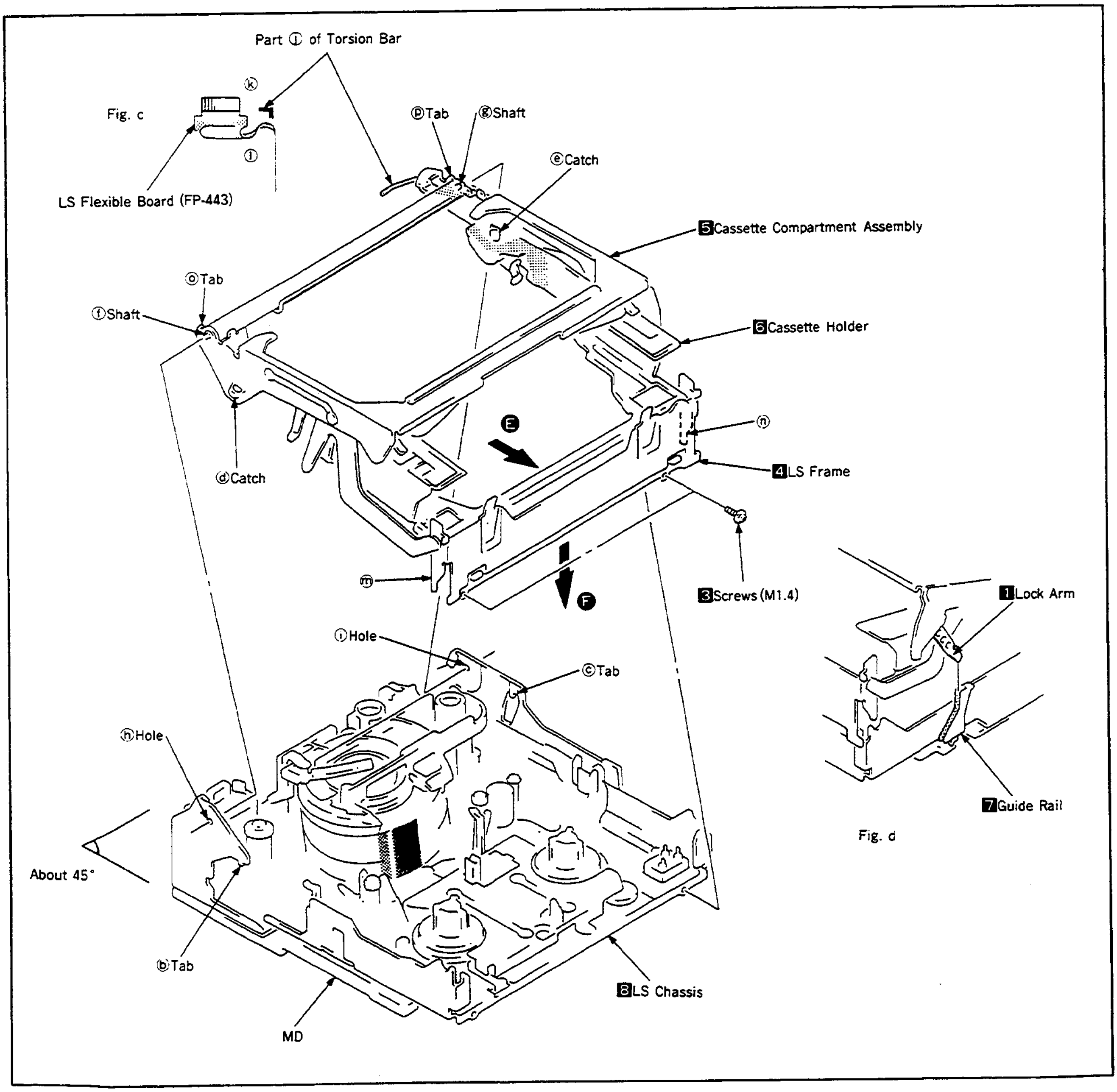

Part ⓙ of Torsion Bar
ⓚ
Fig. c
ⓛ
LS Flexible Board (FP-443)
ⓟTab
ⓖShaft
ⓔCatch
❺Cassette Compartment Assembly
ⓞTab
ⓕShaft
❻Cassette Holder
🅔
ⓝ
ⓓCatch
❹LS Frame
ⓜ
🅕
❸Screws (M1.4)
❶Lock Arm
ⓘHole
ⓒTab
ⓗHole
About 45°
❼Guide Rail
Fig. d
ⓑTab
❽LS Chassis
MD

Fig. 2

1-2. OPERATION WITH CASSETTE COMPARTMENT ASSEMBLY REMOVED (Fig. 3)

1) Referring to the Service Manual, supply power with the cabinet and camera removed. (Make the mechanical deck ready to operate.)
2) Place the cap ❷ on the Reflector C ❶.
3) Press the pin of the push switch ❸ (ON state) and fix it with adhesive tape ❹ in that state.

Note : Press the asterisked (＊) pin to set the REC mode.
(This is not required for the other modes.)

4) Push the cassette compartment DOWN switch ❺ in an arrow direction as shown in Fig. a.

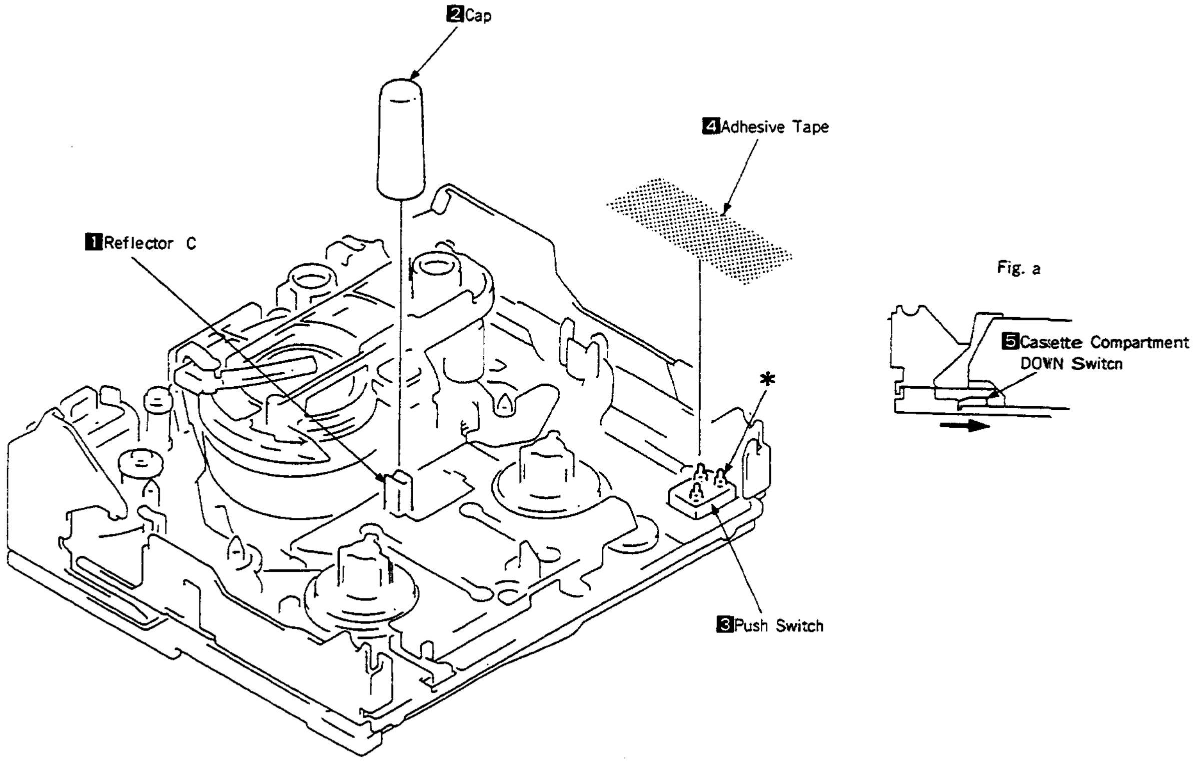

❷Cap
❹Adhesive Tape
❶Reflector C
＊
❸Push Switch
Fig. a
❺Cassette Compartment DOWN Switch

Fig. 3

1-3. HANDLING OF MODE SELECTOR

- Stick the MD process table label to the mode selector IV panel, then mount the panel on the mode selector.
  U,U', FL, O, O' and A mechanisms have different mode indications respectively. Select your disired type. (Fig.4)

1 Construction (Fig.5)

2 Connection (Fig.6)

For CCD-FX410 series

1) Insert the FP-425 flexible connector ❶ and M-SW connector ❷ into the mode selector IV conversion connector ❸ respectively.

3. Handling

1) Use the M mode selector buttons only.
2) During mode selection, "BLANK" lights up when no mode is being selected.
3) If the right M mode selector button is kept pressed, END, EJECT, USE, LOAD, READY,TURN, REC and FF light up in that order.
4) When changing over from the FF mode back to the END mode, press the left M mode selector botton to select your desired mode.

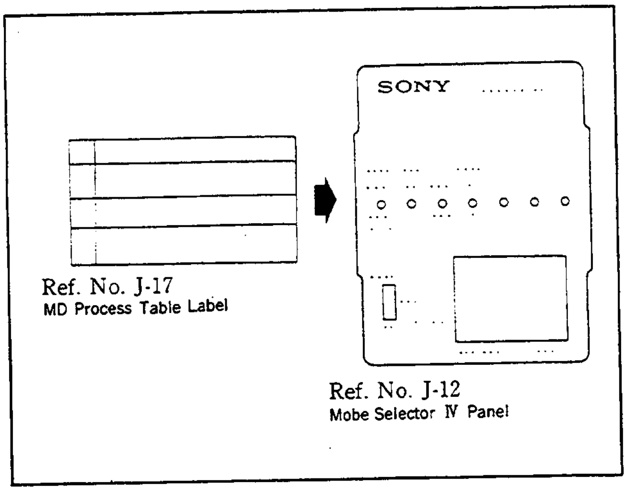

SONY
Ref. No. J-17
MD Process Table Label
Ref. No. J-12
Mobe Selector Ⅳ Panel

Fig. 4

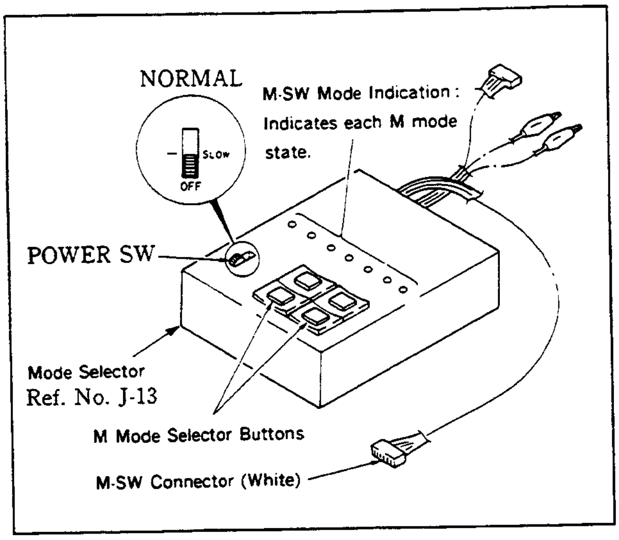

NORMAL
SLOW
OFF
M-SW Mode Indication : Indicates each M mode state.
POWER SW
Mode Selector
Ref. No. J-13
M Mode Selector Buttons
M-SW Connector (White)

Fig. 5

For CCD-FX410 series

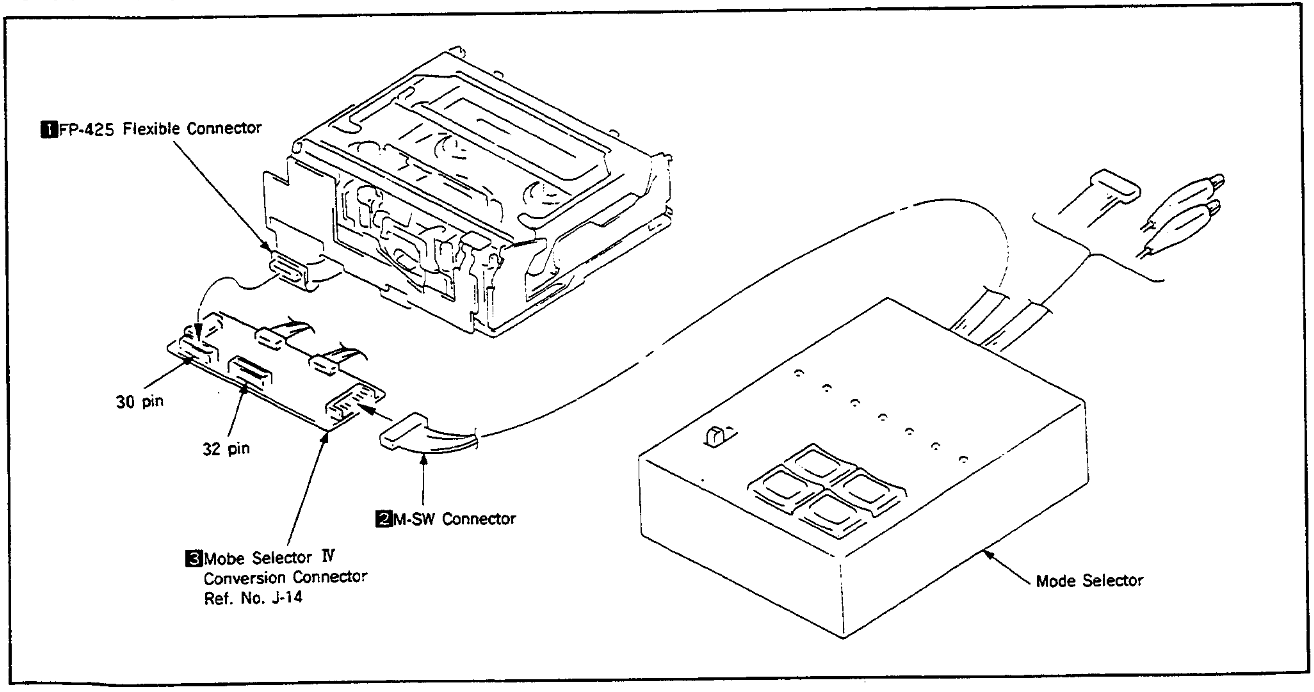
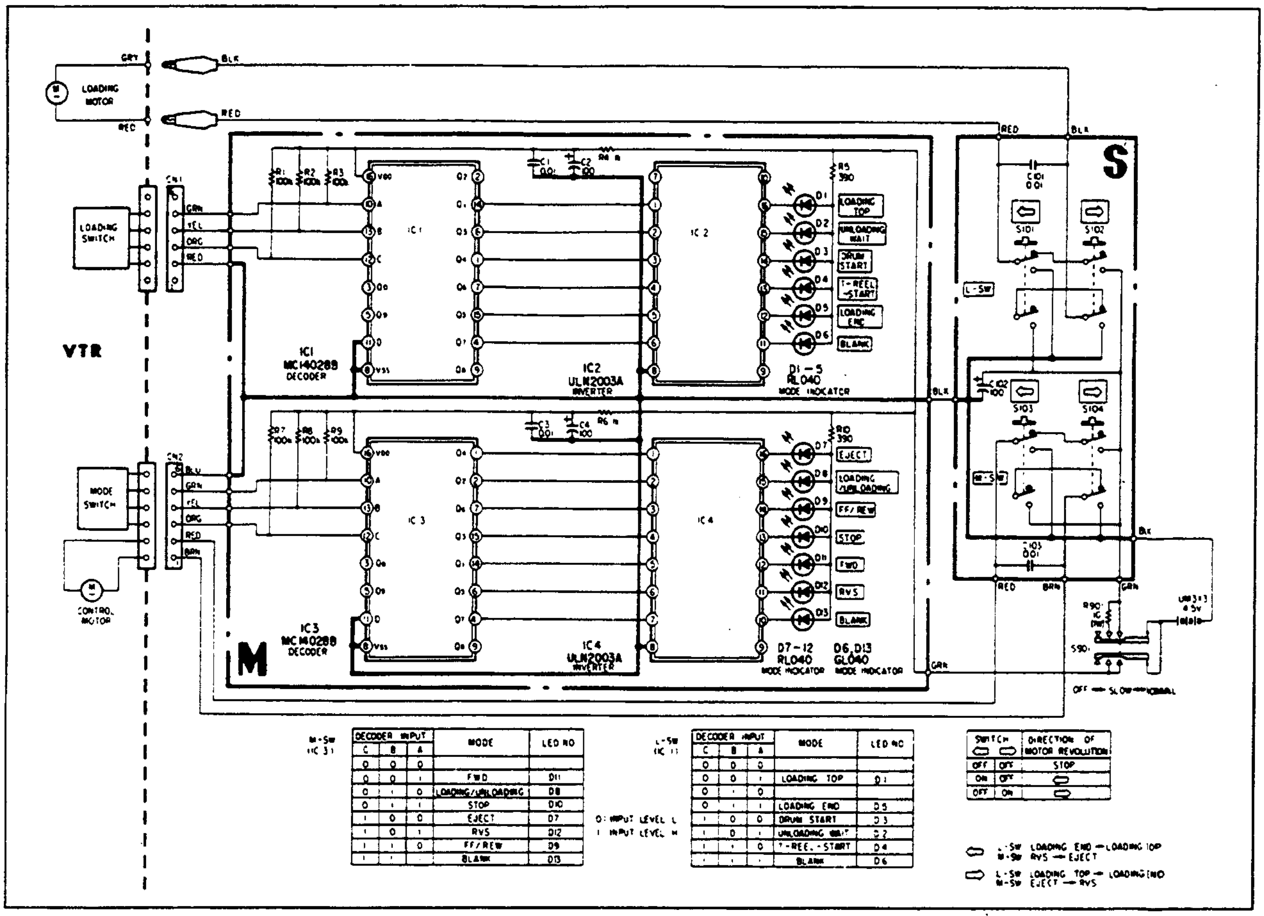

❶FP-425 Flexible Connector
30 pin
32 pin
❷M-SW Connector
❸Mobe Selector Ⅳ
Conversion Connector
Ref. No. J-14
Mode Selector

Fig. 6

1-4. MODE SELECTOR SCHEMATIC DIAGRAM


GRY
BLK
LOADING MOTOR
RED
LOADING SWITCH
CN1
GRN
YEL
ORG
RED
VTR
MODE SWITCH
CN2
BLU
BRN
CONTROL MOTOR
R1 100k
R2 100k
R3 100k
C1 0.01
C2 100
R4 1k
R5 390
IC1 MC14028B DECODER
IC2 ULN2003A INVERTER
D1 – 5 RL040 MODE INDICATOR
LOADING TOP
UNLOADING WAIT
DRUM START
T-REEL START
LOADING END
BLANK
R7 100k
R8 100k
R9 100k
C3 0.01
C4 100
R6 1k
R10 390
IC3 MC14028B DECODER
IC4 ULN2003A INVERTER
D7 – 12 RL040 MODE INDICATOR
D6, D13 GL040 MODE INDICATOR
EJECT
LOADING/UNLOADING
FF/REW
STOP
FWD
RVS
BLANK
M
S
C101 0.01
S101
S102
L-SW
C102 100
S103
S104
M-SW
C103 0.01
R901
S901
OFF ⟵ SLOW ⟵ NORMAL

M-SW (IC 3) DECODER INPUT C	B	A	MODE	LED NO
0	0	0		
0	0	1	FWD	D11
0	1	0	LOADING/UNLOADING	D8
0	1	1	STOP	D10
1	0	0	EJECT	D7
1	0	1	RVS	D12
1	1	0	FF/REW	D9
1	1	1	BLANK	D13

0 : INPUT LEVEL L
1 INPUT LEVEL H

L-SW (IC 1) DECODER INPUT C	B	A	MODE	LED NO
0	0	0		
0	0	1	LOADING TOP	D1
0	1	0		
0	1	1	LOADING END	D5
1	0	0	DRUM START	D3
1	0	1	UNLOADING WAIT	D2
1	1	0	T-REEL-START	D4
1	1	1	BLANK	D6

SWITCH ⇦	SWITCH ⇨	DIRECTION OF MOTOR REVOLUTION
OFF	OFF	STOP
ON	OFF	⇦
OFF	ON	⇨

⇦ L-SW LOADING END → LOADING TOP
M-SW RVS → EJECT

⇨ L-SW LOADING TOP → LOADING END
M-SW EJECT → RVS

1-5. MODE SELECTOR PARTS LIST

CAPACITOR

Ref. No	Part No.	Description		
C1	1-108-579-00	MILER	0.01μF	50V
C2	1-123-333-00	ELECT	100μF	24V
C3	1-108-579-00	MILER	0.01μF	50V
C4	1-123-333-00	ELECT	100μF	24V
C101	1-108-579-00	MILER	0.01μF	50V
C102	1-123-333-00	ELECT	100μF	24V
C103	1-108-579-00	MILER	0.01μF	50V

DIODE

Ref. No	Part No.	Description
D1	8-719-812-31	DIODE TLR123
D2	8-719-812-31	DIODE TLR123
D3	8-719-812-31	DIODE TLR123
D4	8-719-812-31	DIODE TLR123
D5	8-719-812-31	DIODE TLR123
D6	8-719-812-33	DIODE TLG123A
D7	8-719-812-31	DIODE TLR123
D8	8-719-812-31	DIODE TLR123
D9	8-719-812-31	DIODE TLR123
D10	8-719-812-31	DIODE TLR123
D11	8-719-812-31	DIODE TLR123
D12	8-719-812-31	DIODE TLR123
D13	8-719-812-33	DIODE TLG123A

IC

Ref. No	Part No.	Description
IC1	8-752-240-28	IC TC4028BP
IC2	8-752-120-03	IC μPA2003C
IC3	8-759-240-28	IC TC4028BP
IC4	8-759-120-03	IC μPA2003C

RESISTOR

Ref. No	Part No.	Description		
R1	1-247-179-00	CARBON	100K	1/4W
R2	1-247-179-00	CARBON	100K	1/4W
R3	1-247-179-00	CARBON	100K	1/4W
R4	1-247-131-00	CARBON	1K	1/4W
R5	1-247-121-00	CARBON	390	1/4W
R6	1-247-131-00	CARBON	1K	1/4W
R7	1-247-179-00	CARBON	100K	1/4W
R8	1-247-179-00	CARBON	100K	1/4W
R9	1-247-179-00	CARBON	100K	1/4W
R10	1-247-121-00	CARBON	390	1/4W
R901	1-214-594-00	METAL	10	1W

2. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regarless of the length of use.

2-1. CLEANING OF ROTARY DRUM ASSEMBLY

1) Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquif (Ref. No.J-1) to the rotary drum assembly.
   Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

Note : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a pependicular direction to the it. make sure to follow the instructions above for cleaning the rotarydrum assembly.

2-2. CLEANING OF TAPE PATH (Fig.7)

1) In the USE mode, clean the tape running system (TG - 1,- 2,- 3,- 4,- 5, - 6, - 7, pinch roller, and capstan shaft) and the lower drum, using a super fine applicator (Ref. No. J - 3) soaked in the cleaning liquid.

Note : Note that no oil or grease of each link mechanism adheres to the super fine applicator (Ref. No. J - 3).

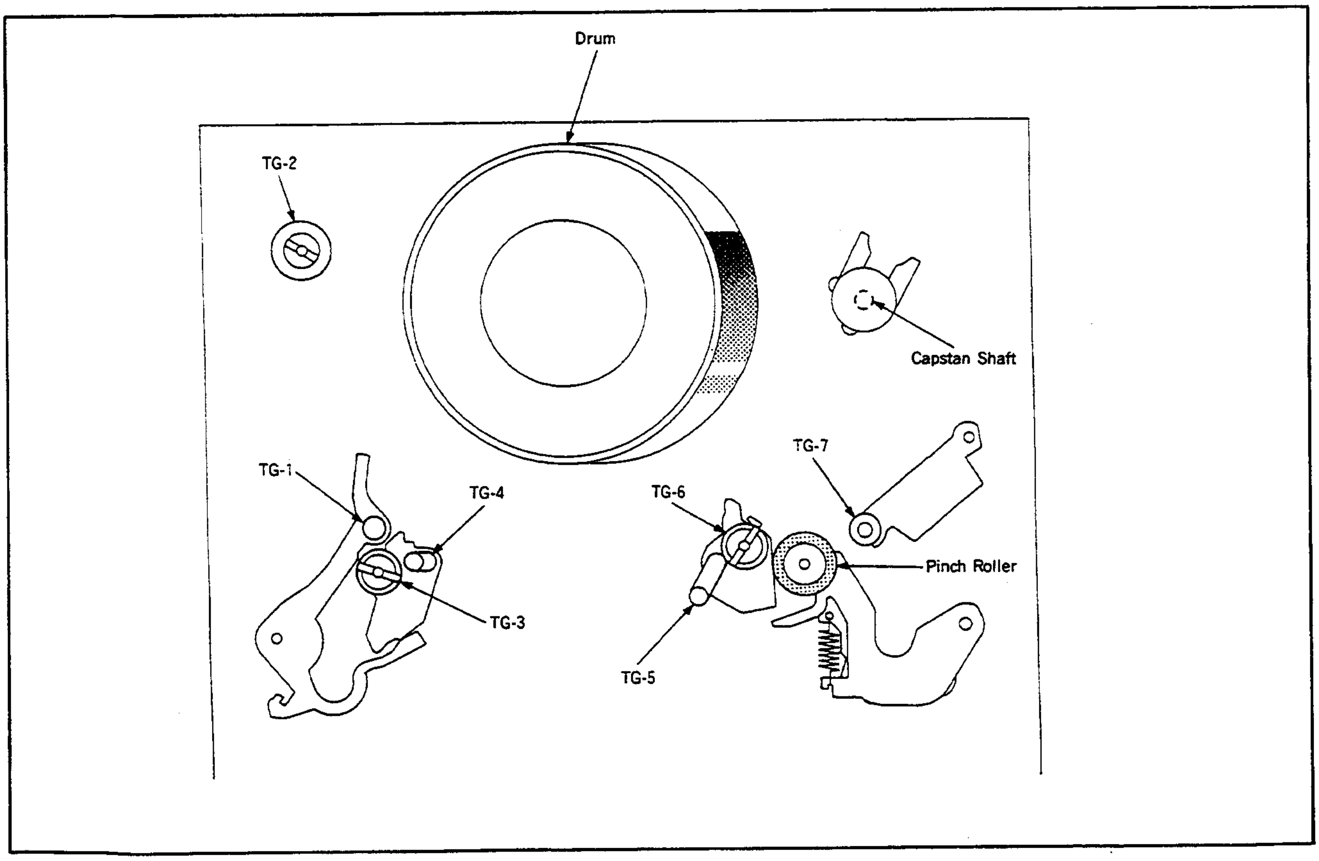


Fig. 7

2-3. PERILDIC CHECK ITEMS

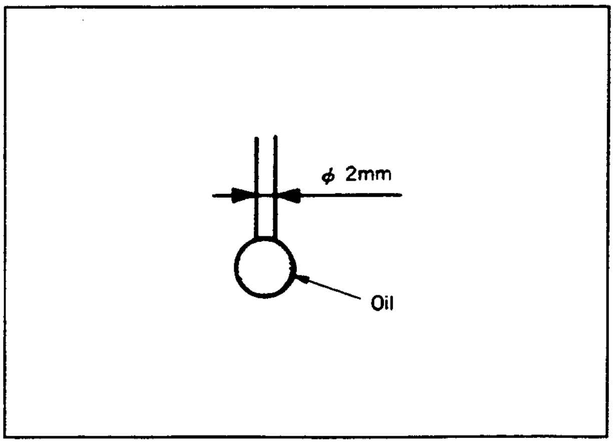
Location of Maintenance and check		Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Tape trans-portion System	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degaus-sing of rotary assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Driving System	Relay belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-944-539-01
	Capstan shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Be adsolutely careful not to get oil on the tape path surface.
	Relay pulley shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	A-7040-304-A
Performance Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD. RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○ : Cleaning ◎ : Oil ☆ : Confirmation

Note : When overhauling, refer to the items above to replace parts.

Note : Concerning oil

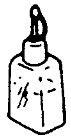
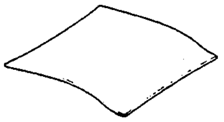
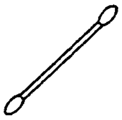
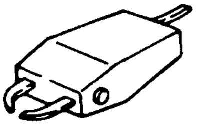
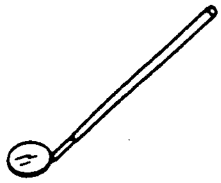
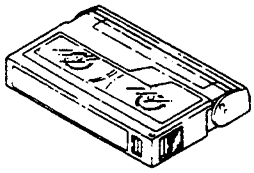
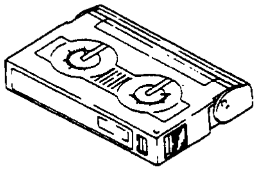
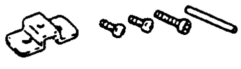
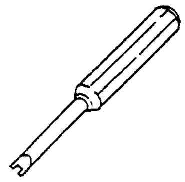
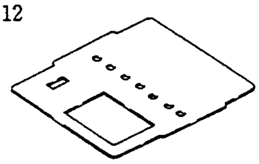
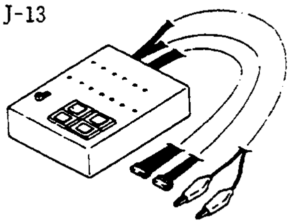
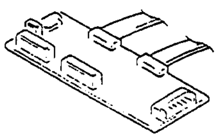
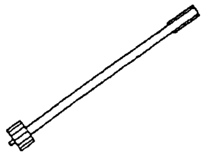
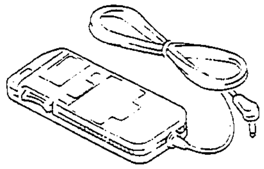
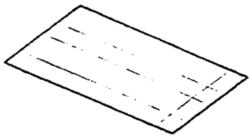
- Be sure to use specified oil. (If you use oil with different visicosity, etc., it may cause troubles.)
  Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT - 68)
- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be worn out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.



2-4. Service jigs list

Ref. No.	Name	Part No.	Fixture No.	Usage and Others
J-1	Cleaning fluid	Y-2031-001-0		
J-2	Chamois cloth	2-034-697-00		
J-3	Super fine applicator (Made by NIPPON APPLICATOR, P752D)			
J-4	Head degausser	Widely available		
J-5	Small mirror for adjustment Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-9	FWD and RVS winding torque cassette	J-6080-824-A	GD-2086	
J-10	Rotary drum jig	(Attached to the maintenance rotary upper drum)		
J-11	Screwdriver for tape path	J-6082-026-A		For tape guide adjustment
J-12	Mode selector Ⅳ panel	J-6082-105-A		
J-13	Mode selector	J-6080-825-A		For all models
J-14	Mode selector Ⅳ conversion connector	J-6082-167-A		
J-15	FWD B.T. adjusting driver	J-6082-182-A		
J-16	Adjusting remote controller	J-6082-053-B		Tape path (Setting of PATH mode)
J-17	MD process table label	J-6082-166-A		

Other equipment
- Oscilloscope
- Analog tester (20 kΩ)

J-1 	J-2 	J-3 	J-4 
J-5 	J-6 	J-9 	J-10  (Attached to the maintenance rotary upper drum)
J-11 	J-12 	J-13 	J-14 
J-15 	J-16 	J-17 	

3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

Note : Use the mode selector (Ref. No. J-13) for the following mechanical checks, adjustments and replacements.

Note : The modes in ☐ are those set by pressing the mode selector buttons.

3-1. RETAINER, GOOSENECK ASSEMBLY (Fig. 8)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove a screw ❶.
3) Remove the Retainer, Gooseneck assembly ❷.

2. Mounting

1) Mount the Retainer, Gooseneck assembly ❷ with its two tabs and holes of LS chassis engaged with its hole and a boss of LS chassis.
2) Tighten the screw ❶.
3) Referring to 1-1, mount the cassette compartment assembly.

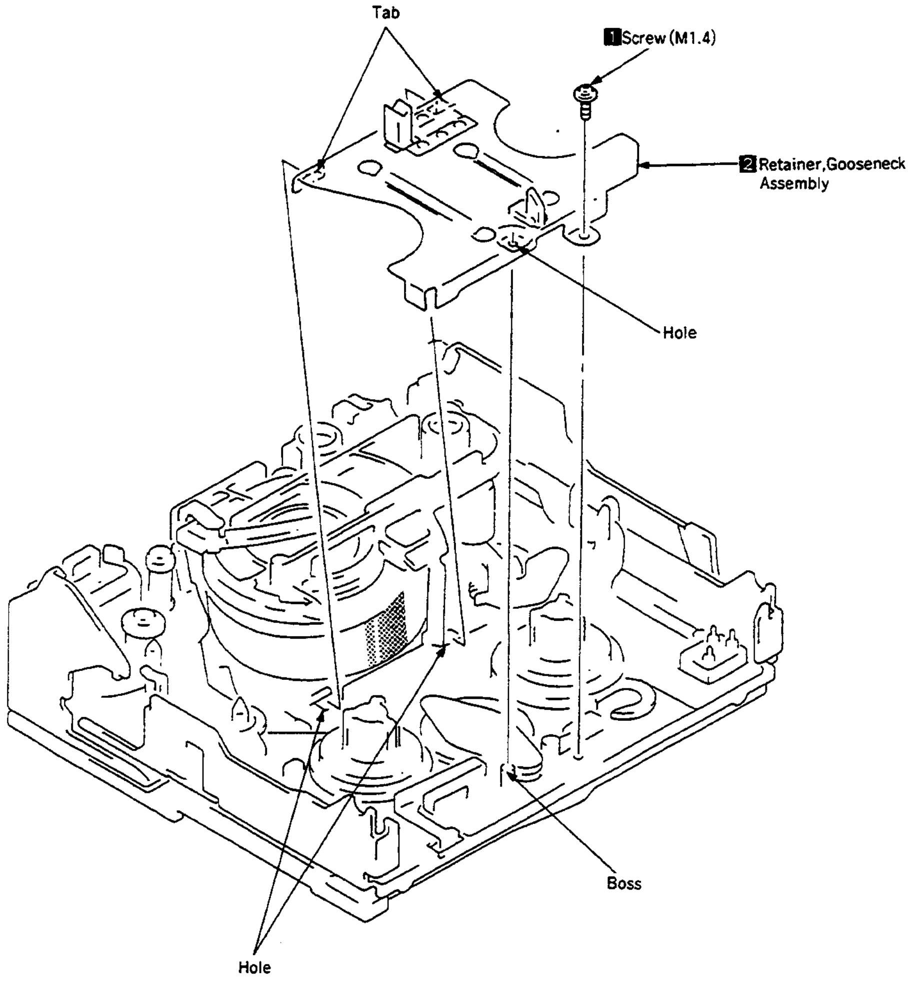


Fig. 8

3-2. PROTECTOR BASE ASSEMBLY (Fig. 9)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screws ❶, then the protector base assembly ❷.

2. Mounting

1) Mount the protector base assembly ❷ with its three hole engaged with two dowels of mechanical chassis, and a dowel of TG-5 Base Holder ❸.
2) Tighten two screws ❶.
3) Referring to 1-1, mount the cassette compartment assembly.

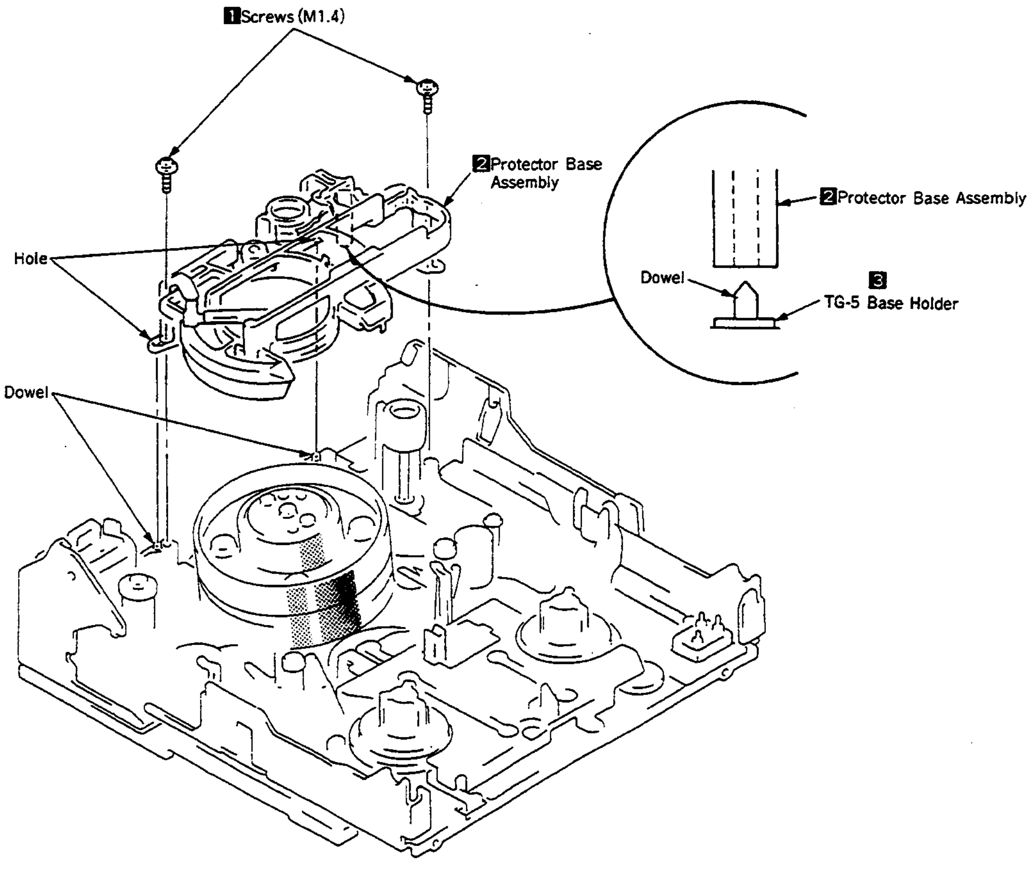

❶Screws (M1.4)
❷Protector Base Assembly
Hole
Dowel
❷Protector Base Assembly
Dowel
❸ TG-5 Base Holder

Fig. 9

3-3. DRUM ASSEMBLY (Fig. 10)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-2, remove the protect base assembly.
3) Disconnect the connector of FP-444 flexible board ❶ on the back of MD.
4) Remove three screw ❷, then the drum assembly ❸.

Note : Do not touch the outer surfaced of drum (hold portions Ⓐ and Ⓑ of drum).

2. Mounting

1) Mount the drum assembly ❸ while aligning with two dowels ⓐ of chassis.

Note : Do not touch the outer surfaced of drum (hold portions Ⓐ and Ⓑ of drum).

2) Tighten three screw assemblies ❷ in the order of 1, 2 and 3.

Note : Tighten lightly not to deform the drum lead.

3) Apply a screw locking agent to prevent screws ftom loosening.

Note : In tightening the screws, pushing down the drum extremely will allow the drum to float up.

4) Connect the connector of FP-444 flexible board ❶ on the back of MD.
5) Referring to 3-2, mount the protect base assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

Note : After mounting, make tape path adjustment in Section 4.

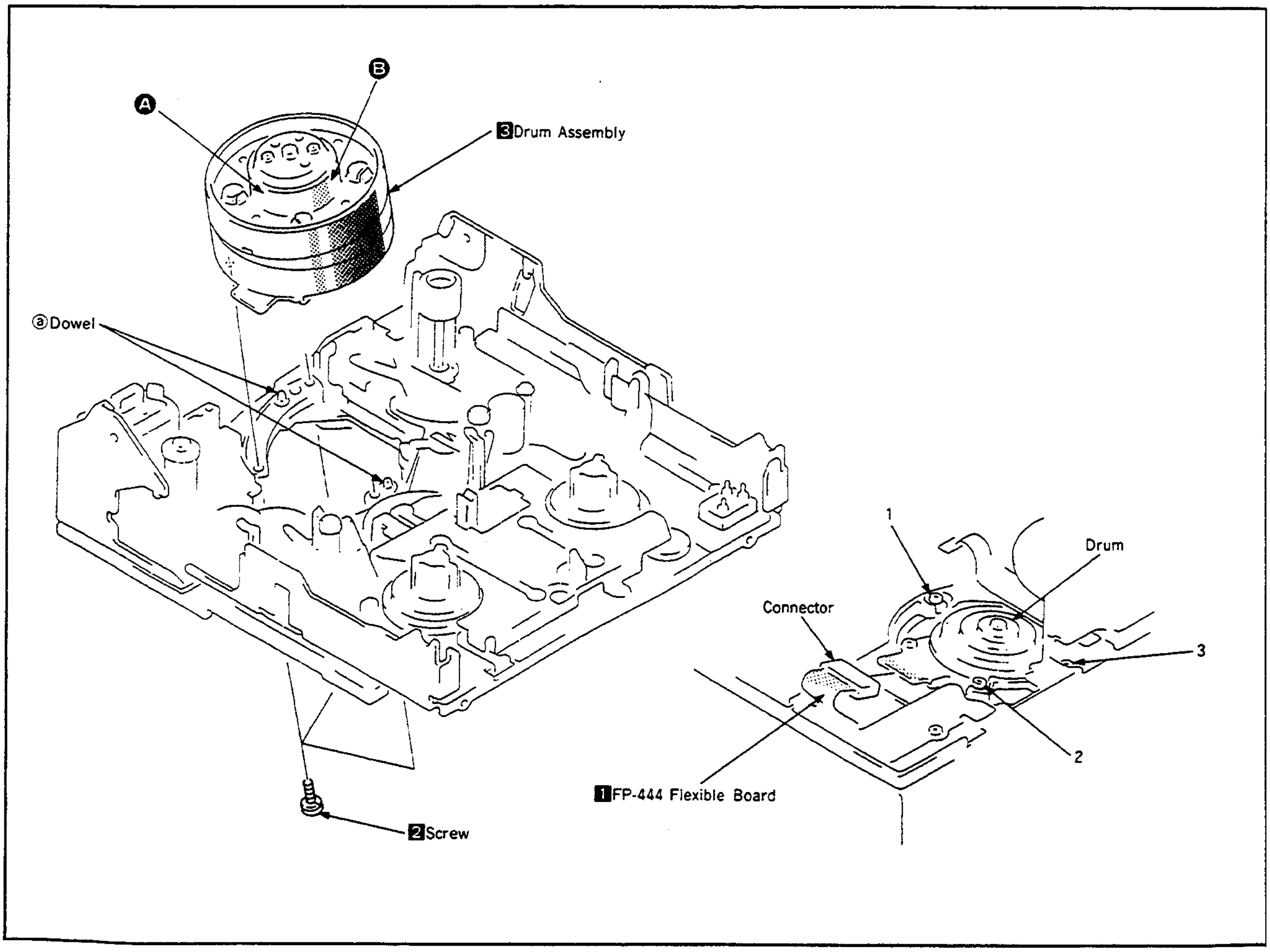


Fig. 10

3-4. CAPSTAN MOTOR ASSEMBLY (Fig. 11)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screw ❶, then the capstan cover ❷.
3) Remove the screw ❸, then the capstan motor assembly ❹.

2. Mounting

1) Mount the capstan motor assembly ❹ and tighten the scre ❸.

Note : In mounting the capstan motor assembly, hold lightly the capstan motor assembly until the rotor gear aligns with the change gear Assy, then insert fully the assembly when both gears are engaged completely by manually rotating the rotor. (Take care not to damage the change gear Assy.)

2) Mount the capstan cover ❷ and tighten two screws ❶.
3) Referring to 1-1, mount the cassette compartment assembly.

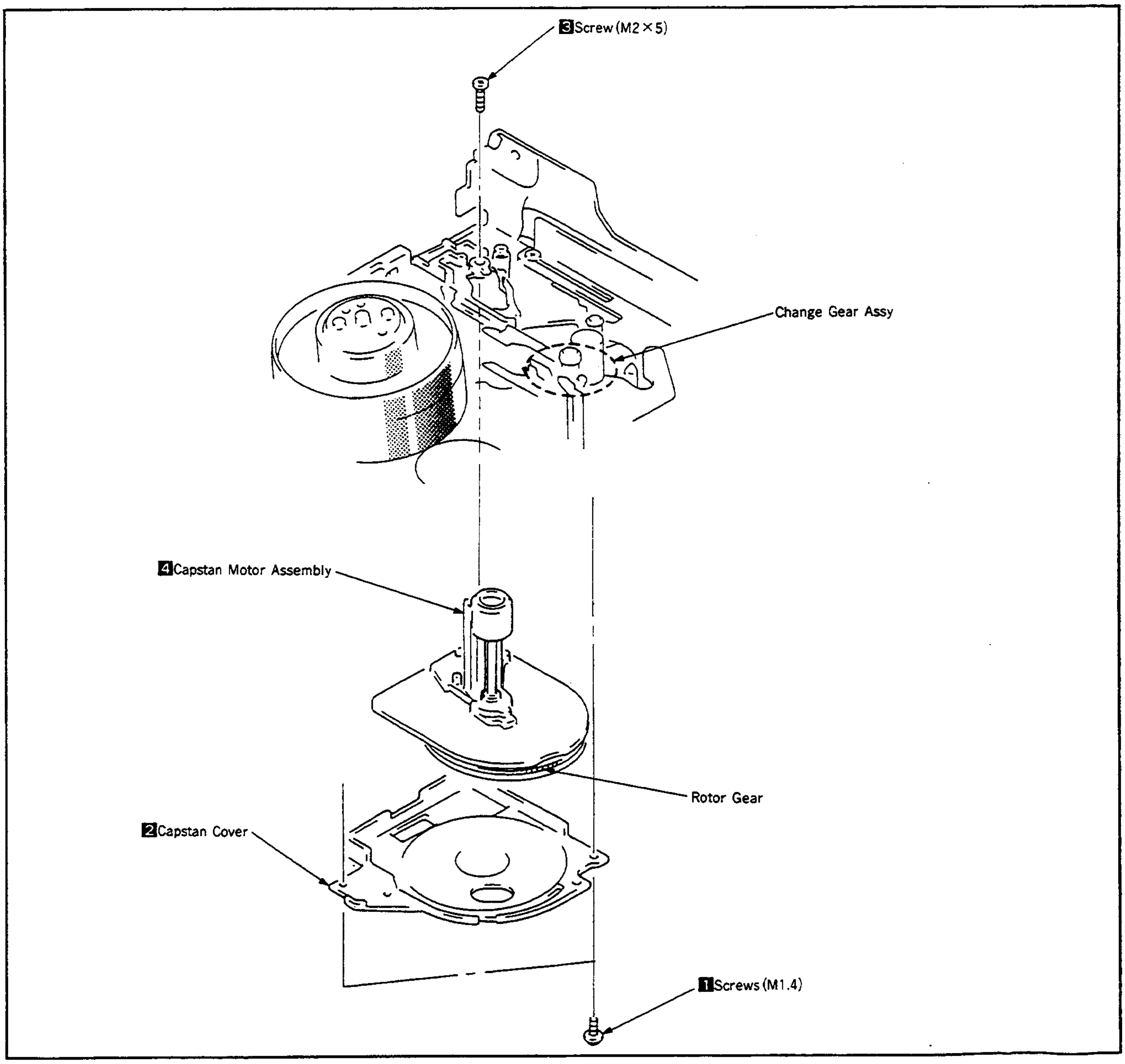

❸Screw (M2 × 5)
Change Gear Assy
❹Capstan Motor Assembly
Rotor Gear
❷Capstan Cover
❶Screws (M1.4)

Fig. 11

3-5. TAKE-UP REEL TABLE ASSEMBLY AND T- SOFT ASSEMBLY (Fig. 12)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Remove the take-up reel table assembly 1.
4) Remove the T soft assembly 2, then the T soft arm 3.

2. Mounting

1) Mount the T soft arm 3 with its long hole ⓒ engaged with the boss ⓓ of LS chassis.
2) Mount the T soft assembly 2 with its tab ⓐ engaged with a square hole ⓑ of T soft arm, as shown in Fig. a.
3) Mount the take-up reel table assembly 1 and rotate it toward the arrow Ⓐ to be latched with T hard claw.
4) Referring to 3-1. mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

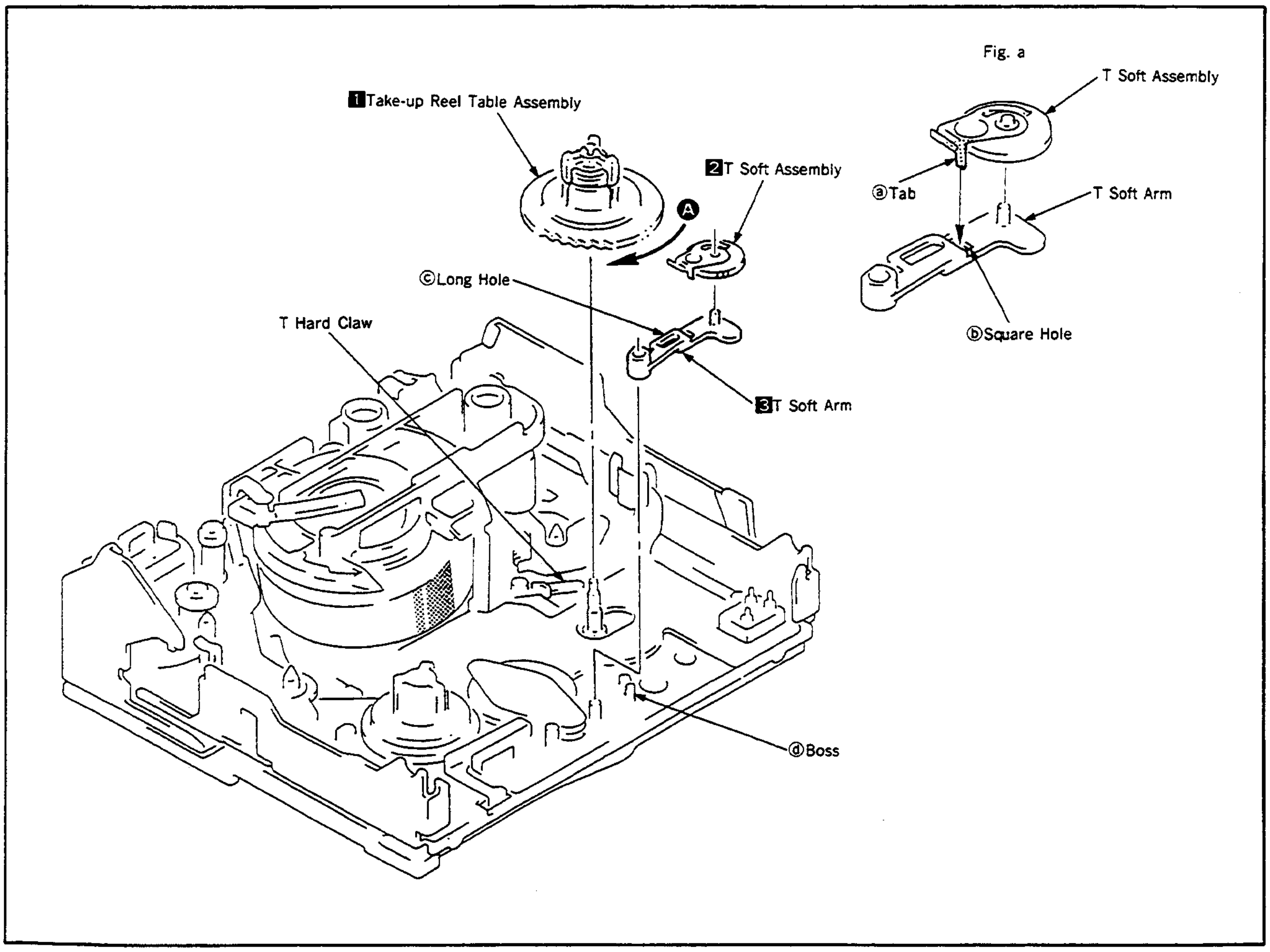

1 Take-up Reel Table Assembly
2 T Soft Assembly
Ⓐ
ⓒLong Hole
T Hard Claw
3 T Soft Arm
ⓓBoss
Fig. a
T Soft Assembly
ⓐTab
T Soft Arm
ⓑSquare Hole

Fig. 12

3-6. PINCH ARM ASSEMBLY (Fig. 13)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Select the [READY] mode.
3) Remove a washer **1**, then the pinch arm assembly **2**.

2. Mounting

1) Select the [READY] mode.
2) Hooking a spring of pinch arm assembly **2** to the casse positioning boss on the chassis, mount the pinch arm asser bly on the shaft of LS chassis assembly as shown in Fig. a.
3) Push in the spring with tweezers up to the root of boss as shown in Fig. b.
4) Mount the washer **1**.
5) Referring to 1-1, mount the cassette compartment assembly.

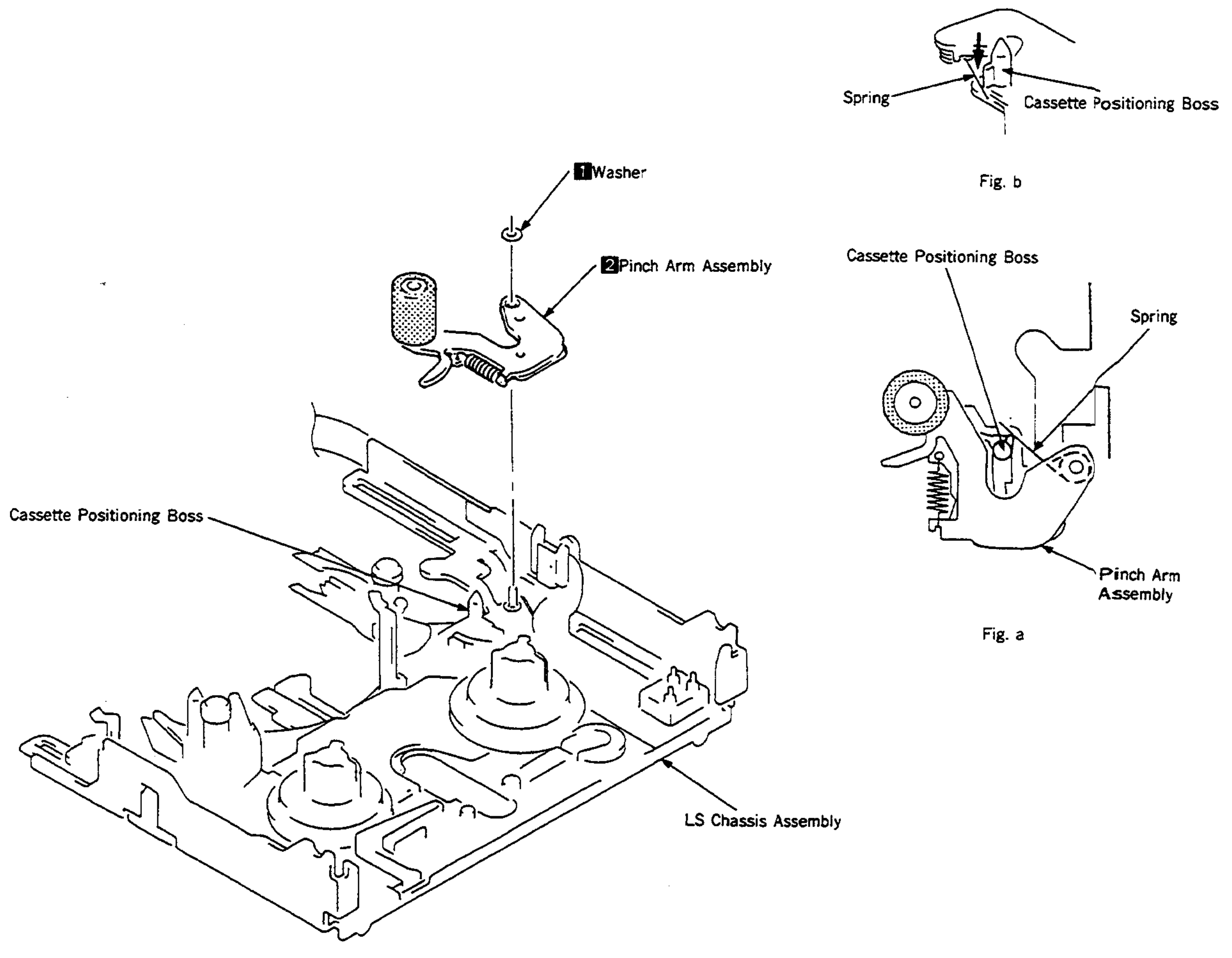

Spring
Cassette Positioning Boss
1 Washer
2 Pinch Arm Assembly
Cassette Positioning Boss
Spring
Cassette Positioning Boss
Pinch Arm Assembly
LS Chassis Assembly

Fig. b

Fig. a

Fig. 13

LS CHASSIS ASSEMBLY (Fig. 14)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Remove a screw ❶, TG-5 base holder ❷, and LS flexible board ❸.
5) Remove a lock washer ❹, then the gooseneck as sembly ❺.
6) Remove four screws ❻, then the LS chassis assembly ❼.

2. Mounting

1) Select the USE mode.
2) Confirm that the T hard claw and the outsert on the back of LS chassis are positioned as shown in Fig. a. (The T hard claw must be higher than corner ⓐ of chassis hole.) If not high, turn the outsert in the arrow direction while pushing the T hard claw from LS chassis to the chassis.
3) Sliding the GL slider, align the top edge of long hole ⓑ in GL slider with the edge face ⓒ of LS chassis hole as shown in Fig. b.
4) Mount the LS chassis assembly ❼ on the chassis.

Note : At this time, aligh a dowel ⓓ on LS chassis with a long hole ⓔ of No.7 guide on chassis, a long hole of GL slider with a GL arm pin, a groove of LS cam plate with an LS arm pin respectively as shown in Fig. c and d.

5) Tighten four screws ❻.
6) Mount the LS flexible board ❸ and TG-5 base holder ❷,then tighten the screw ❶.
7) Mount the Gooseneck assembly ❺ and fix it with a washer ❹.

Note : Using the mode selector, confirm that loading and unloading are performed smoothly.

8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.
10) Referring to 1-1, mount the cassette compartment assembly.

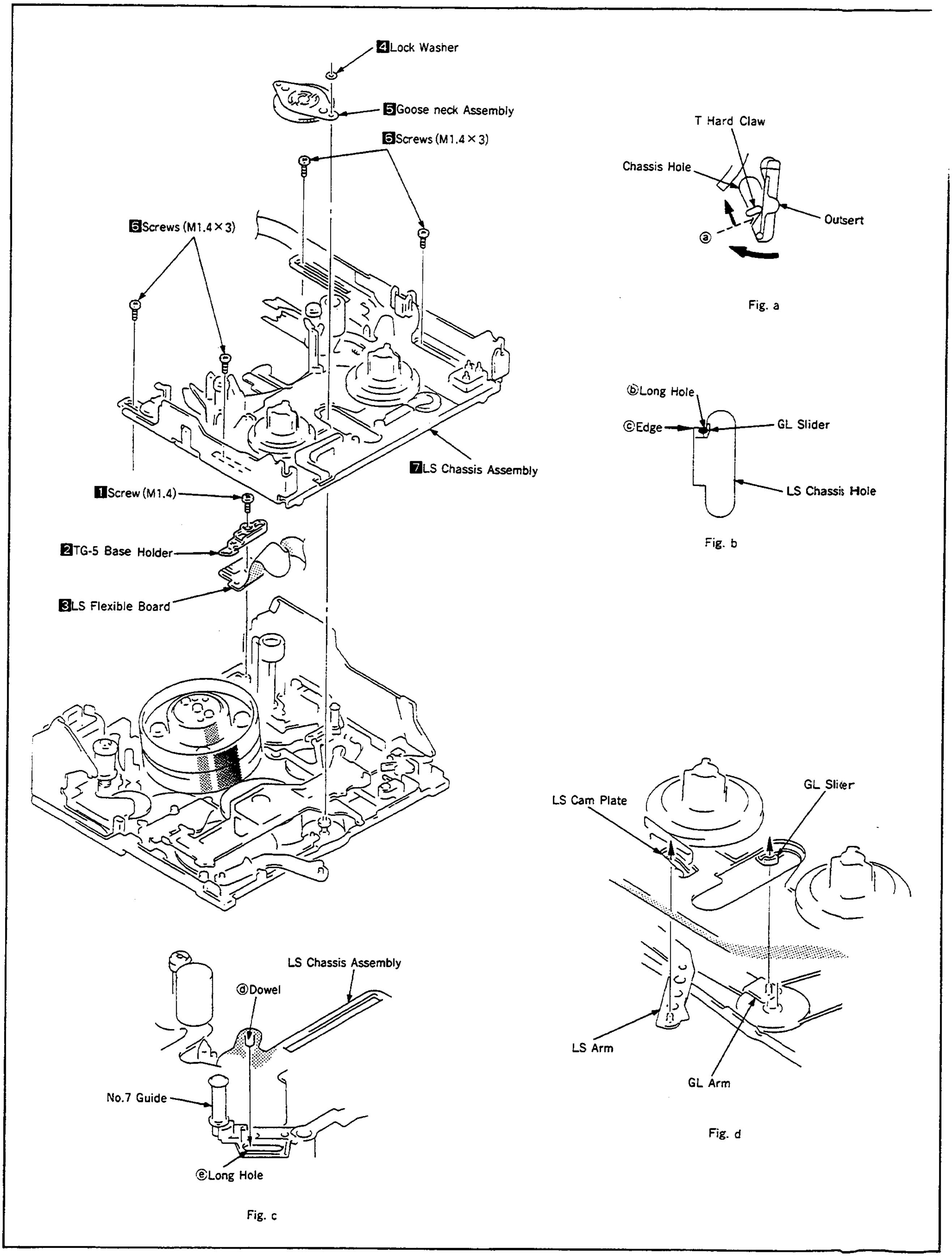

4 Lock Washer
5 Goose neck Assembly
6 Screws (M1.4×3)
6 Screws (M1.4×3)
7 LS Chassis Assembly
1 Screw (M1.4)
2 TG-5 Base Holder
3 LS Flexible Board
T Hard Claw
Chassis Hole
Outsert
ⓐ
ⓑLong Hole
ⓒEdge
GL Slider
LS Chassis Hole
LS Cam Plate
GL Slider
LS Arm
GL Arm
LS Chassis Assembly
ⓓDowel
No.7 Guide
ⓔLong Hole

Fig. a

Fig. b

Fig. d

Fig. c

Fig. 14

3- GUIDE BASE T ASSEMBLY AND GUIDE BASE S ASSEMBLY (Fig. 15, 16)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Push in the GL slider 1 toward the arrow Ⓐ, and remove the guide base T assembly 2 and guide base S assembly 3 from the guide rail respectively as shown in Fig. 15.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T sofr assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

6) Turning the guide base T assembly 2 and guide base S assembly 3 respectively, align the shaft to hole to remove as shown in Fig. a.

2. Mounting

1) Turning the guide base T assembly 2 and guide base S assembly 3 respectively, align the shaft with a hole to mount as shown in Fig. a (Fig. 15).
2) On the back side of chassis, insert the guide arm T assembly 4, guide arm S assembly 5 and GL slider 1 from position shown in Fig.b to position shown in Fig. c. Also, aligning the guide base T assembly 2 and guide base S assembly 3 with the respective guide rails, push in the GL slider 1 toward the arrow Ⓑ as shown in Fig. 16.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm.

6) Referring to 1-1, mount the cassette compartment assembly.

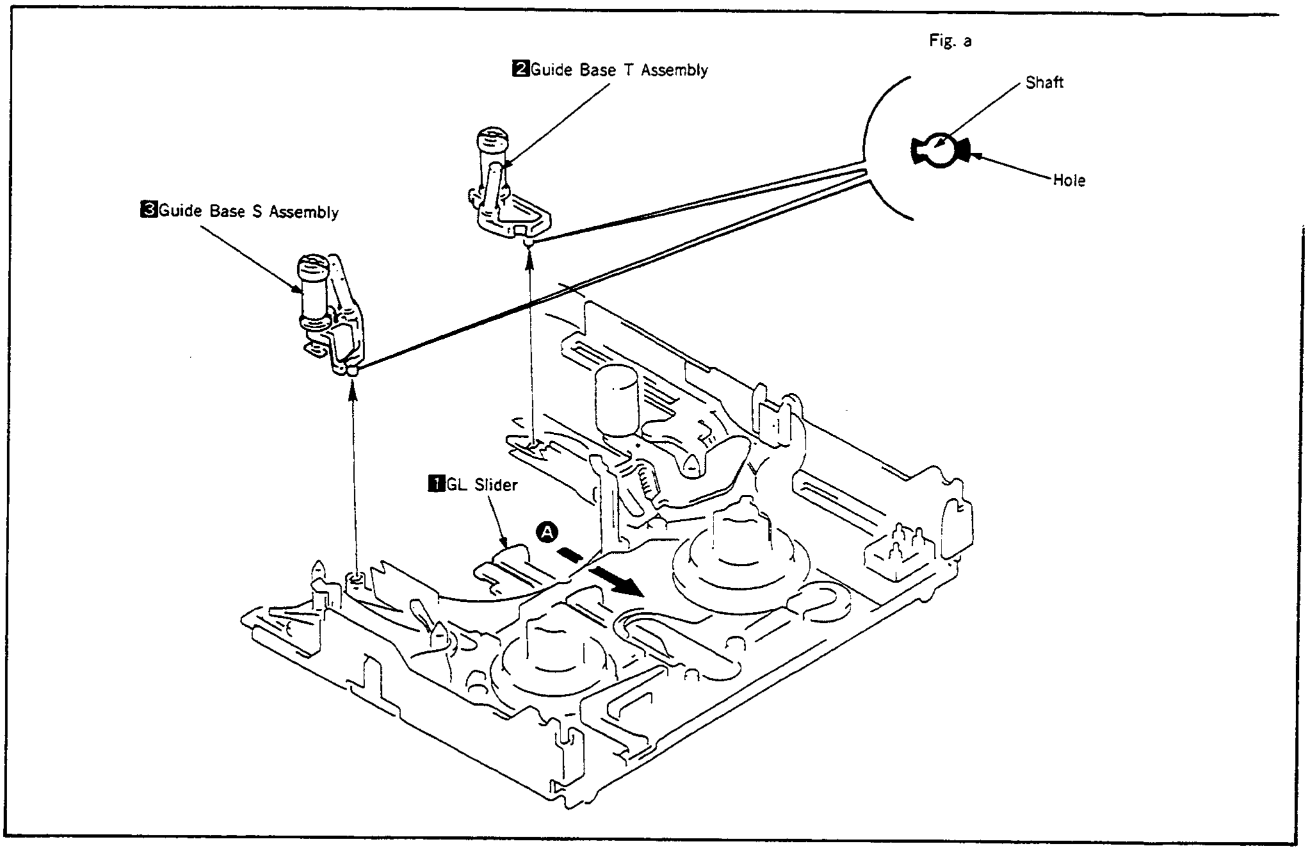


Fig. a
2 Guide Base T Assembly
Shaft
Hole
3 Guide Base S Assembly
1 GL Slider
A

Fig. 15

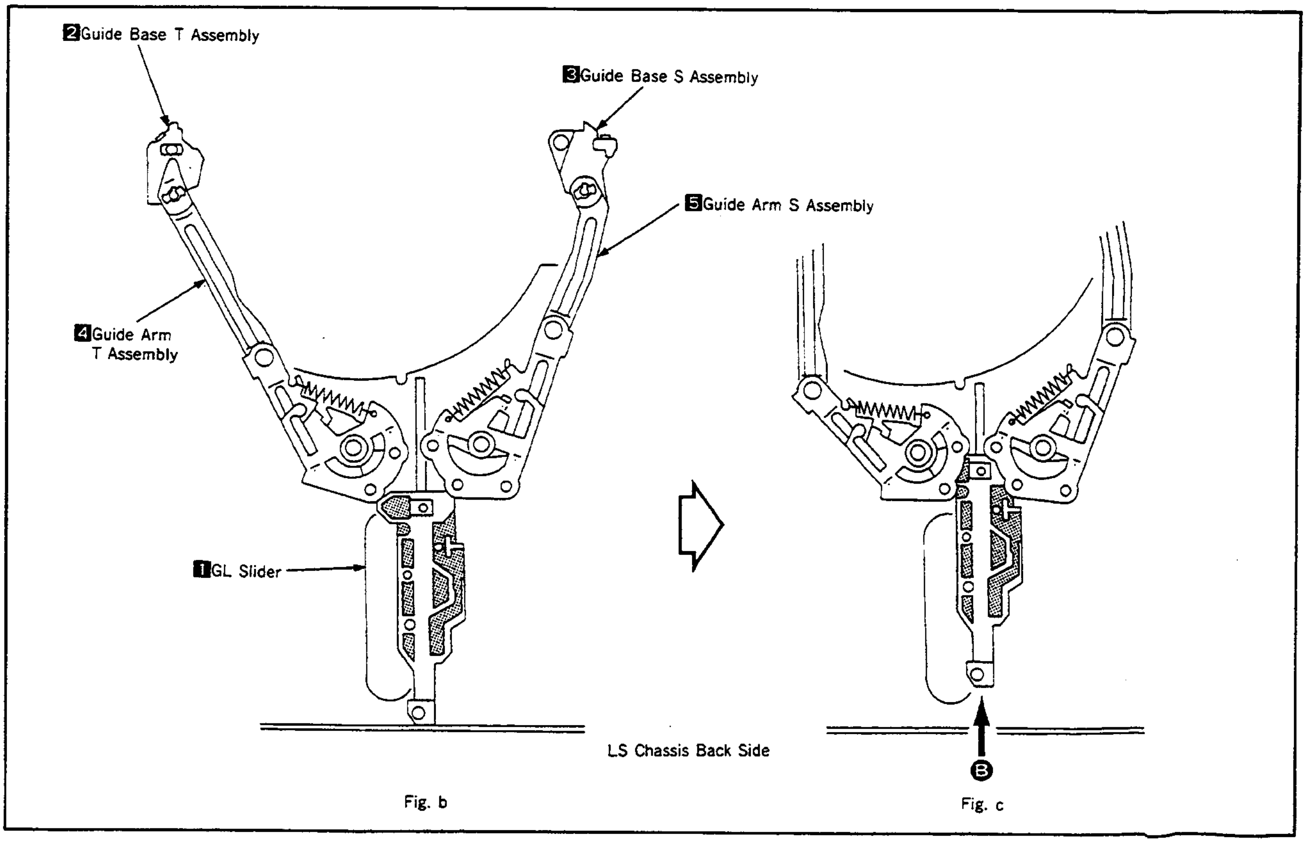

2 Guide Base T Assembly
3 Guide Base S Assembly
5 Guide Arm S Assembly
4 Guide Arm T Assembly
1 GL Slider
LS Chassis Back Side
B

Fig. b

Fig. c

Fig. 16

3 GUIDE ARM T ASSEMBLY AND GUIDE ARM S ASSEMBLY (Fig. 17)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base T assembly and guide base S assembly.
6) Remove lock washers ❶, then the guide arm T assembly ❷ and guide arm S assembly ❸ respectively from the back side of chassis.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assmbly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2. Mounting

1) Mount the guide arm T assembly ❷ and guide arm S assembly ❸, then fix them with a lock washer ❶ respectively.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2) Referring to 3-8, mount the guide base T assembly, guide-base S assembly and GL slider.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

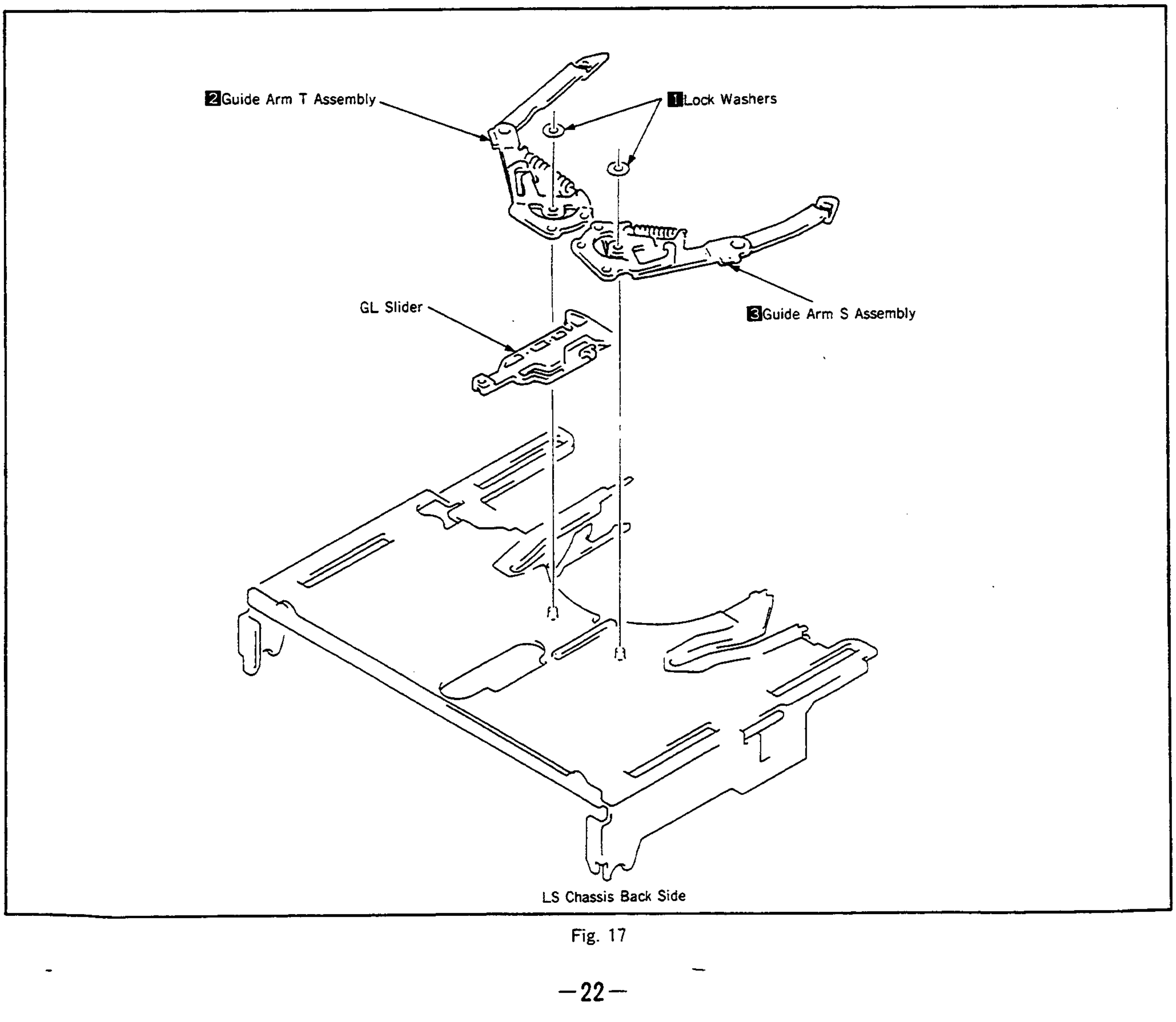


Fig. 17

3-10. SUPPLY REEL TABLE ASSEMBLY AND TG-1 ARM ASSEMBLY (Fig. 18)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base S assembly.
6) Remove a screw 1⃞, then the string 2⃞ from the supply reel table assembly 3⃞. For easy removal of string block 4⃞, insert a flat-blade screwdriver into a groove ⓐ and push it up (Fig. a).
7) Remove the supply reel table assembly 3⃞.
8) Remove a tension coil spring 5⃞.
9) Turn the TG-1 arm assembly 6⃞ up to a portion ⓒ of LS chassis hole in the arrow 🅐 direction so that its tab ⓑ can be disengaged (Fig. b).

2. Mounting

1) Pushing the S soft brake 7⃞ toward the arrow 🅑, mount thesupply reel table assembly 3⃞.
2) Route the string 2⃞ under the TG-1 arm asembly 6⃞, andinsert the tab ⓑ of TG-1 arm assembly into the LS chassis hole ⓒ, then turn the TG-1 arm assembly in the reverse direction of arow 🅐 (Fig. b).
3) Wind the string 2⃞ along the groove of supply reel t assembly 3⃞ (Fig. a).

Note : Do not curl the string extremely. Also, avoid adhesion oil, otherwise the image will be distorted.

4) Using the FWD B.T. adjusting driver (Ref. No. J-15), shift the string block 4⃞ toward the arrow 🅒 and tighten the screw 1⃞ (Fig. a).
5) Engage the tension coil spring 5⃞ to the chassis hook.

Note : Confirm that the string 2⃞ is surely wound around the groove of supply reel table assembly 3⃞ (Fig.a).

6) Referring to 3-8, mount the guide base S assembly.
7) Referring to 3-7, mount the LS chassis assembly.
8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm. (Refer to 3-5 Take-up Reel Table Assembly and Take-up Soft Assembly.)

10) Referring to 1-1, mount the cassette compartment assembly.

Note : Referring to 3-22, adjust the tension regulator position.

Note : Referring to 3-23, adjust the forward back tension.

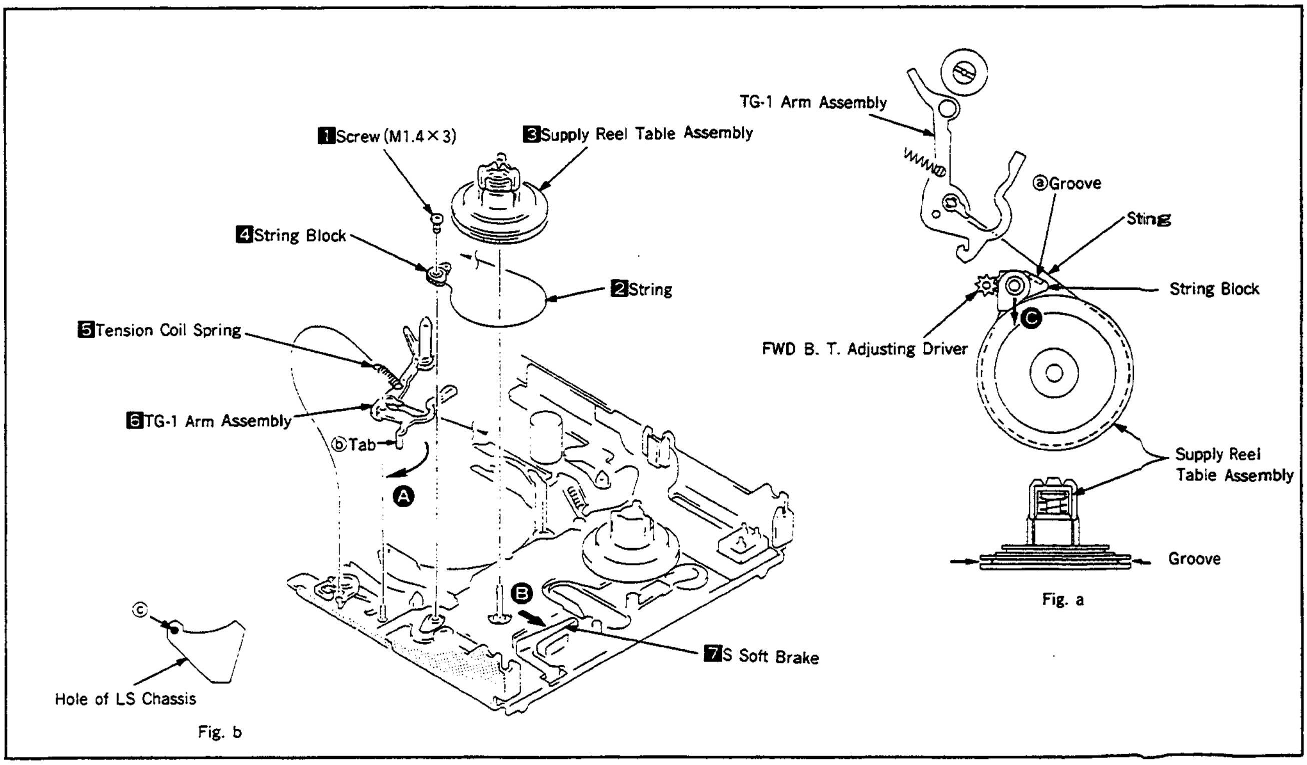

1⃞Screw (M1.4 × 3)
3⃞Supply Reel Table Assembly
4⃞String Block
2⃞String
5⃞Tension Coil Spring
6⃞TG-1 Arm Assembly
ⓑTab
🅐
🅑
7⃞S Soft Brake
ⓒ
Hole of LS Chassis
Fig. b
TG-1 Arm Assembly
ⓐGroove
Sting
String Block
FWD B. T. Adjusting Driver
🅒
Supply Reel Table Assembly
Groove
Fig. a

Fig. 18

3. TG-2 ROLLER ASSEMBLY (Fig. 19)

1. Removal

1) Remove the TG-2 roller assembly ❶ .
2) Remove a compression coil spring ❷ .

2.Mounting

1) Insert a compression coil spring ❷ into the boss on chassis.
2) Rotate gently the TG-2 roller assembly ❶ until the screw is engaged.

3. Presetting of TG-2 Roller Height (Fig. a)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3. 3 ± 0. 05mm.

Note : After adjustment, perform 4. TAPE PATH ADJUSTMENT.

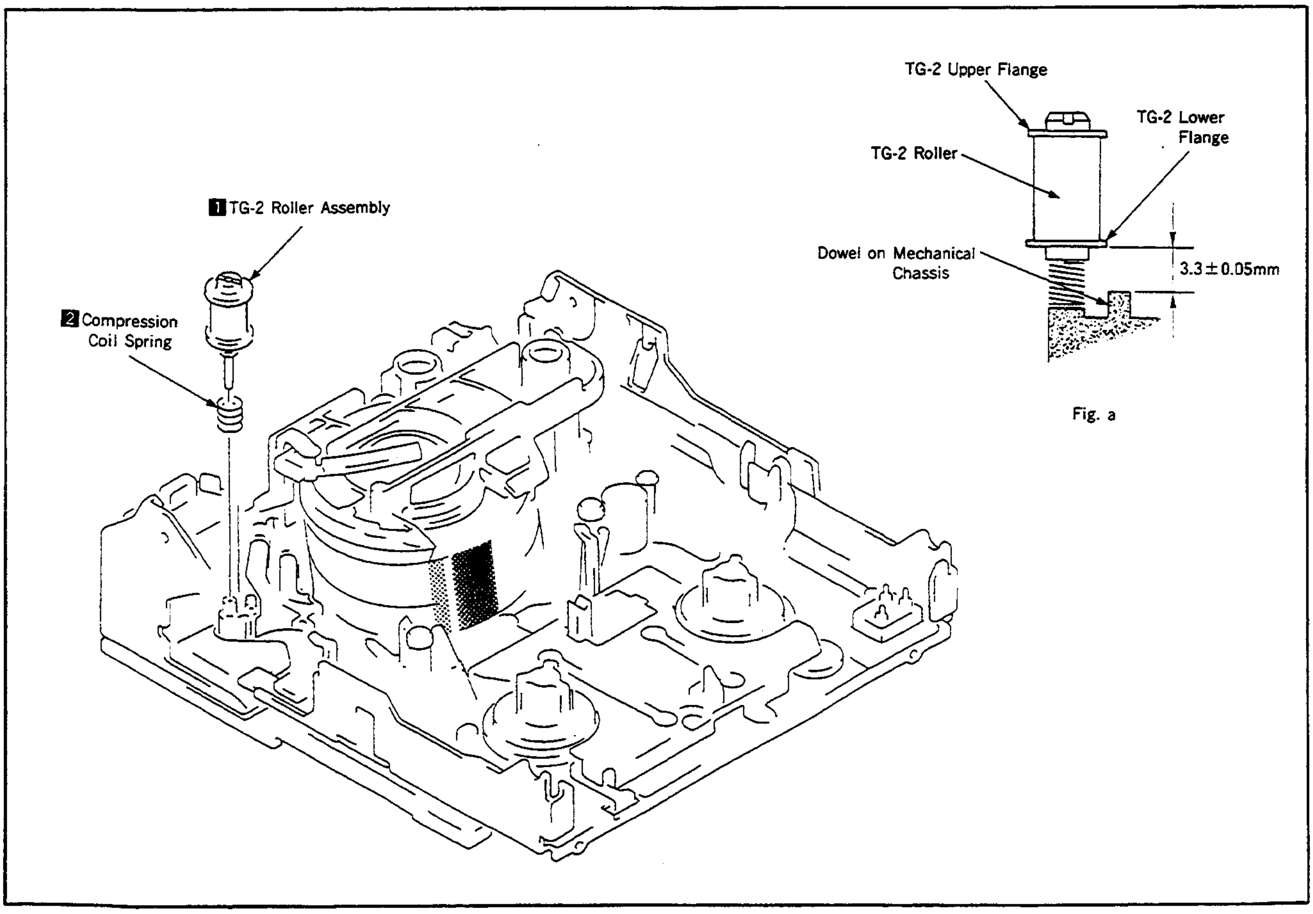

❶ TG-2 Roller Assembly
❷ Compression Coil Spring
TG-2 Upper Flange
TG-2 Lower Flange
TG-2 Roller
Dowel on Mechanical Chassis
3.3±0.05mm
Fig. a

Fig. 19

3-12. TG-7 ARM ASSEMBLY (Fig. 20)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Raise a portion ⓐ of TG-7 arm Leaf spring **1** in arrow direction with a flat-blade screwdriver or tweezers to disengage the tab from the chassis, then remove the TG-7 arm Leaf spring as shown in Fig. a.
6) Remove the TG-7 assembly **2** from the shaft of mechanical-chassis.

2. Mounting

1) Mount the TG-7 arm assembly **2** to the shaft of mechani chassis.
2) Mount the TG-7 arm Leaf spring **1** to the mechanicalcha sis.
   * Push in the tab of Leaf spring until it clicks into a detent ofchassis (Fig. a).
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartmnet assembly.

Note : After mounting, perform 4. TAPE PATH ADJUSTMENT.

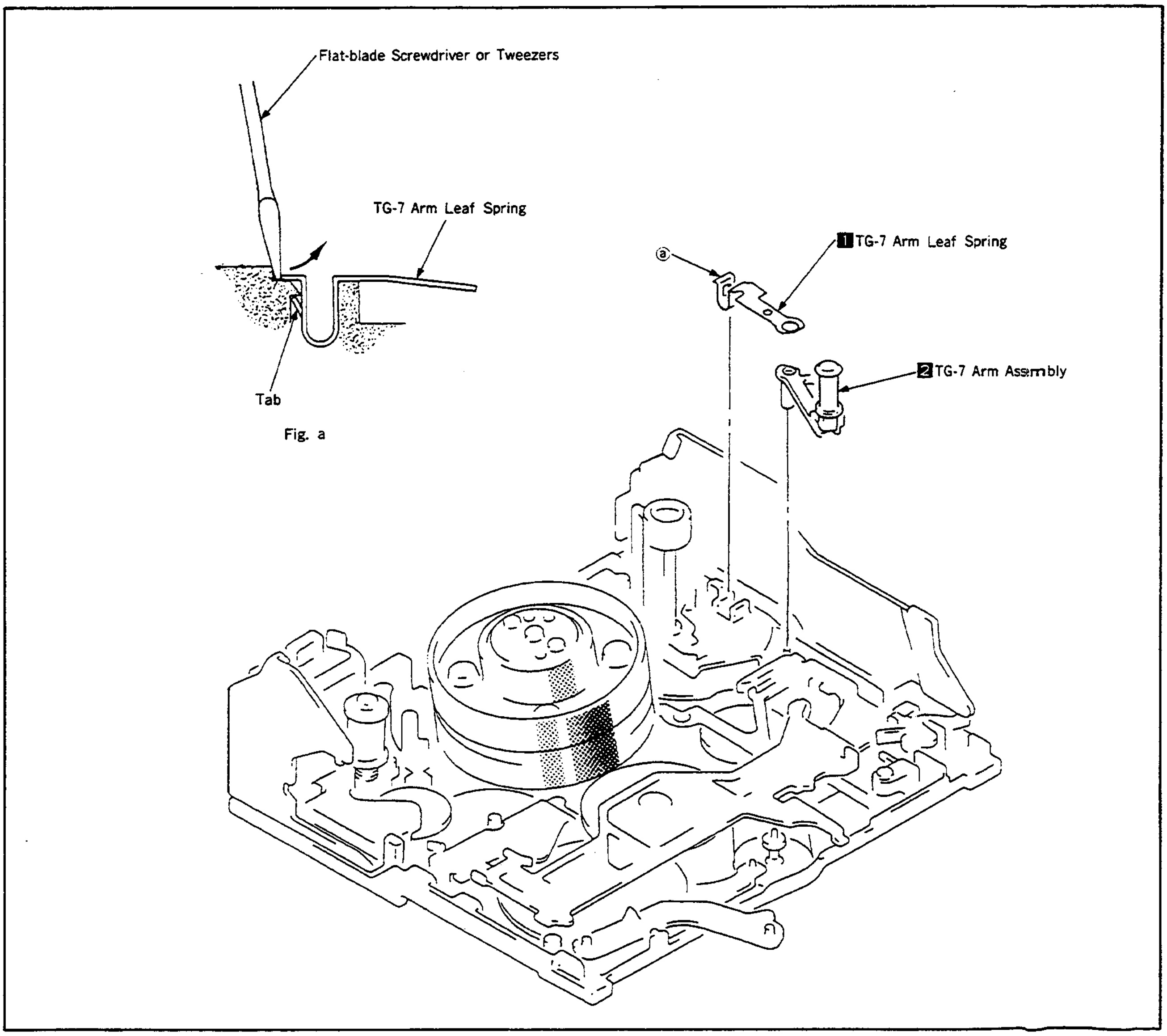


Fig. a

Fig. 20

3 . LM MOTOR ASSEMBLY (Fig. 21)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Select the LOAD mode (at the position where the FF arm assembly is not above the screw ❶).
6) Remove two screws ❶, then the LM motor assembly ❷.

2. Mounting

1) Aligning the dowel ⓐ of LM motor assembly ❷ with the hole ⓑ of mechanical chassis, mount the LM motor assembly with its hole ⓒ inserted into the mechanical chassis shaft ⓓ.
2) Tighten two screws ❶.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

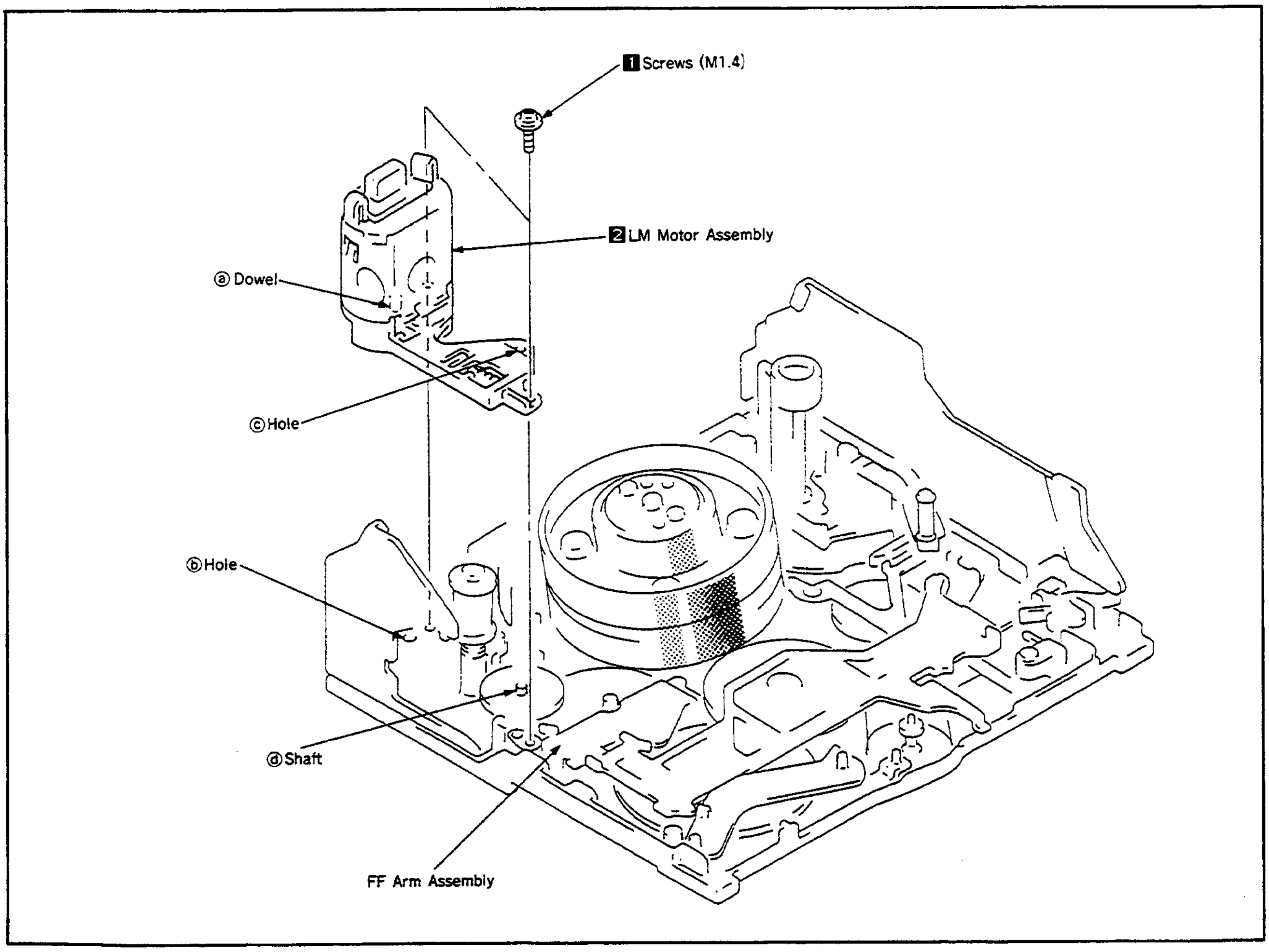


Fig. 21

3-14. LS ARM (Fig. 22)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the proctector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove the LS arm 1 from the shaft of mechanical chassis.

Note : Take care not to drop the LS roller 2.

2. Mounting

1) Mount the LS arm 1 meeting with mechanical chassis sh and cam groove.

Note : Move the LS arm 1 in arrow direction to confirm that the LS roller 2 is surely inserted.

2) Referring to 3-7, mount the LS chassis assembly.
3) Referring to 3-2, mount the protector base assembly.
4) Referring to 3-1, mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

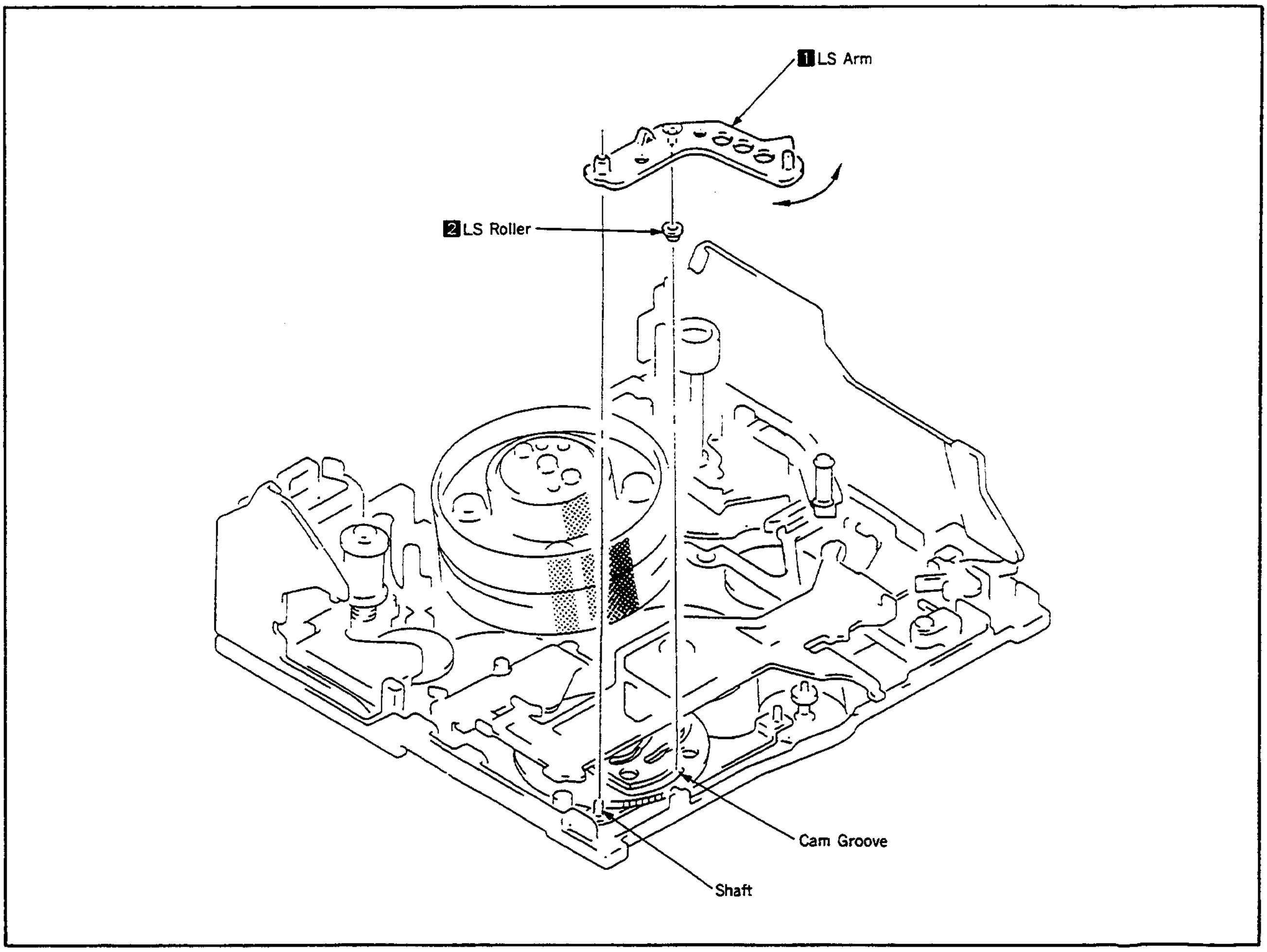


Fig. 22

. M SLIDER ASSEMBLY (Fig. 23)

Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove two screws ❶, then the gear holder ❷.
6) Remove two lock washers ❸, then the M slider assembly ❹.

2. Mounting

1) Mount the M slider assembly ❹, aligning long holes ⓐ and ⓑ of M slider assembly with shafts ⓒ and ⓓ of mechanical chassis, and a long hole ⓔ with shaft ⓕ of press arm assembly, and also shaft ⓖ with outer groove ⓗ of cam respectively.
2) Mount two lock washers ❸.
3) Mount the gear holder ❷ with its outserts ⓘ and ⓙ inserted into holes in the mechanical chassis.
4) Tighten two screws ❶.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

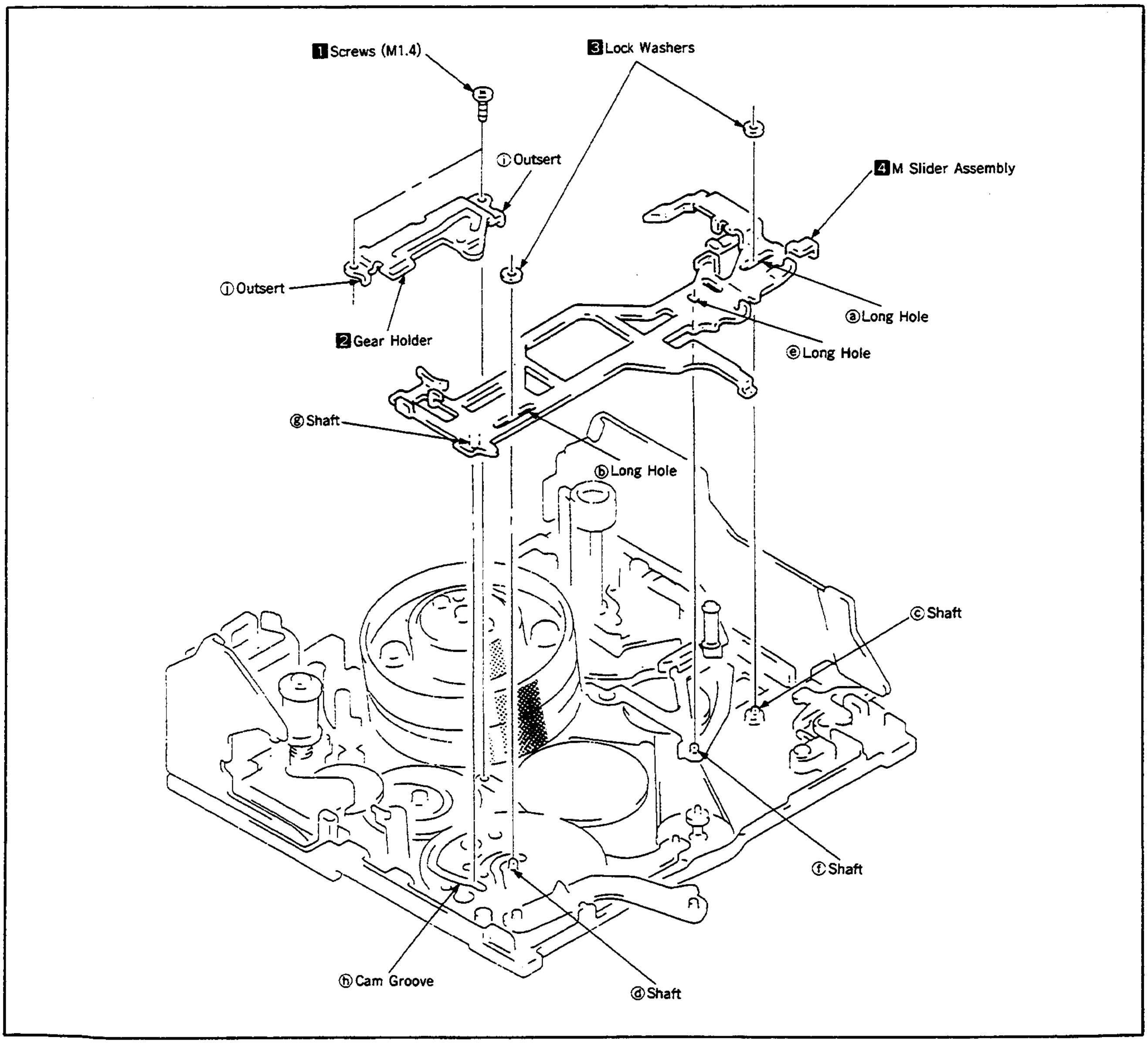

❶ Screws (M1.4)
❸ Lock Washers
ⓘ Outsert
❹ M Slider Assembly
ⓙ Outsert
ⓐ Long Hole
❷ Gear Holder
ⓔ Long Hole
ⓖ Shaft
ⓑ Long Hole
ⓒ Shaft
ⓕ Shaft
ⓗ Cam Groove
ⓓ Shaft

Fig. 23

3-16. PINCH PRESS ARM ASSEMBLY (Fig. 24)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assemvly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove a lock washer ❶, then pinch press arm assembly ❷.

2.Mounting

1) Mount the pinch press arm assembly ❷, inserting its sh ⓐ into the cam groove ⓑ of HC drive arm, and hole ⓒ in the shaft ⓓ of mechanical chassis.
2) Mount the lock washer ❶.
3) After mounting, shift the pinch press arm assembly toward the arrow direction.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-3, mount the drum assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

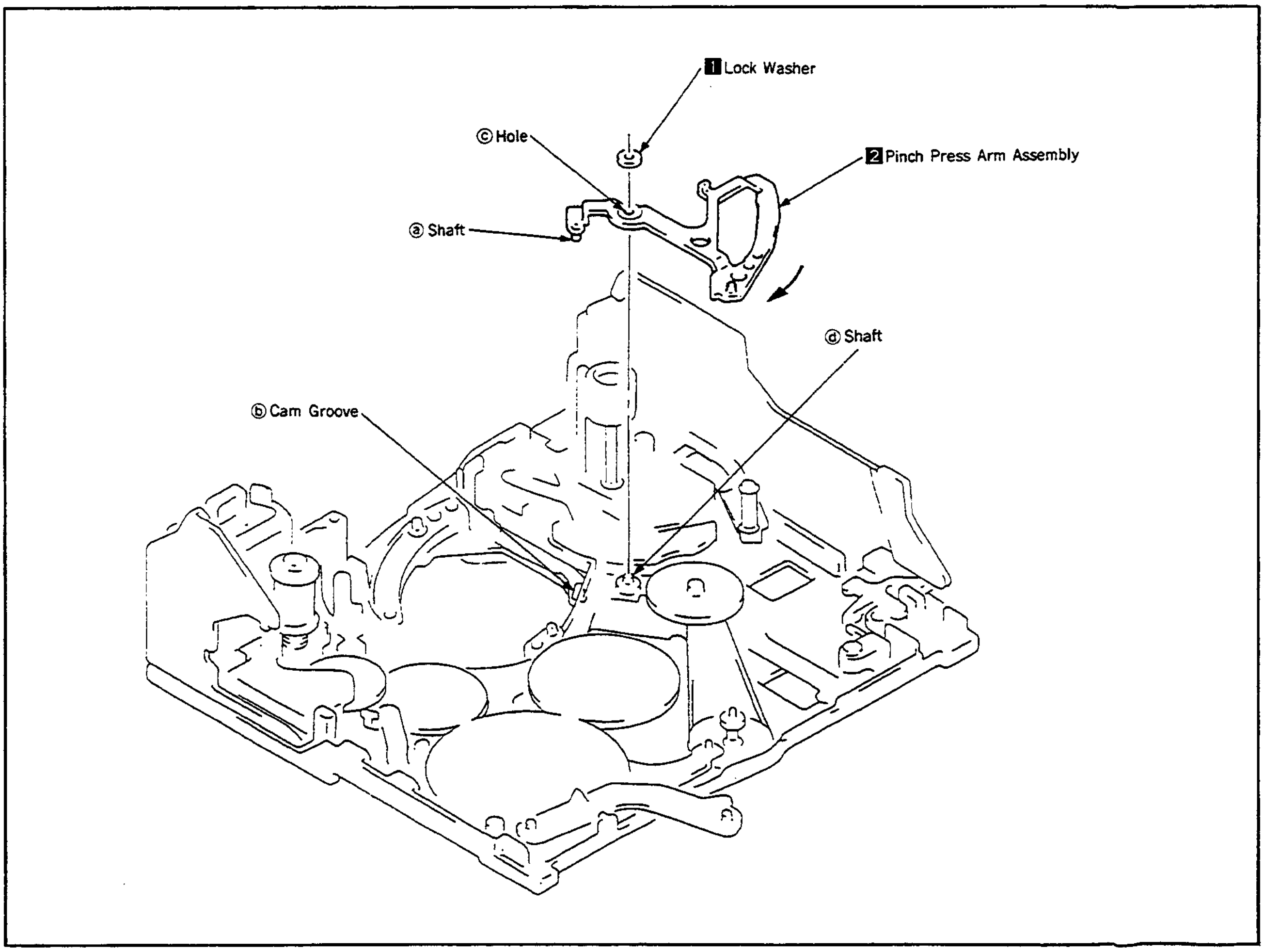


Fig. 24

. CAM (Fig. 25)

Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove the cam ■.

2. Mounting

1) Referring to 3-13, remove the LM motor assembly.

Note : Take care not to allow grease of LM motor assembly to stick to the TG-2 roller assembly.

2) Mount the cam ■, aligning its center hole with shaft of mechanical chassis, and the cam groove with the shaft of GL arm assembly. At this time , make sure that the ▲ mark on L gear B is aligned with that on the cam and also a recess is aligned with the phase aligning hole respectively as shown in Fig. a.

Note : Apply grease to the cam groove if it scarecely remains.

3) Mount the LM motor assembly.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-14, mount the LS arm assembly.
6) Referring to 3-7, mount the LS chassis assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

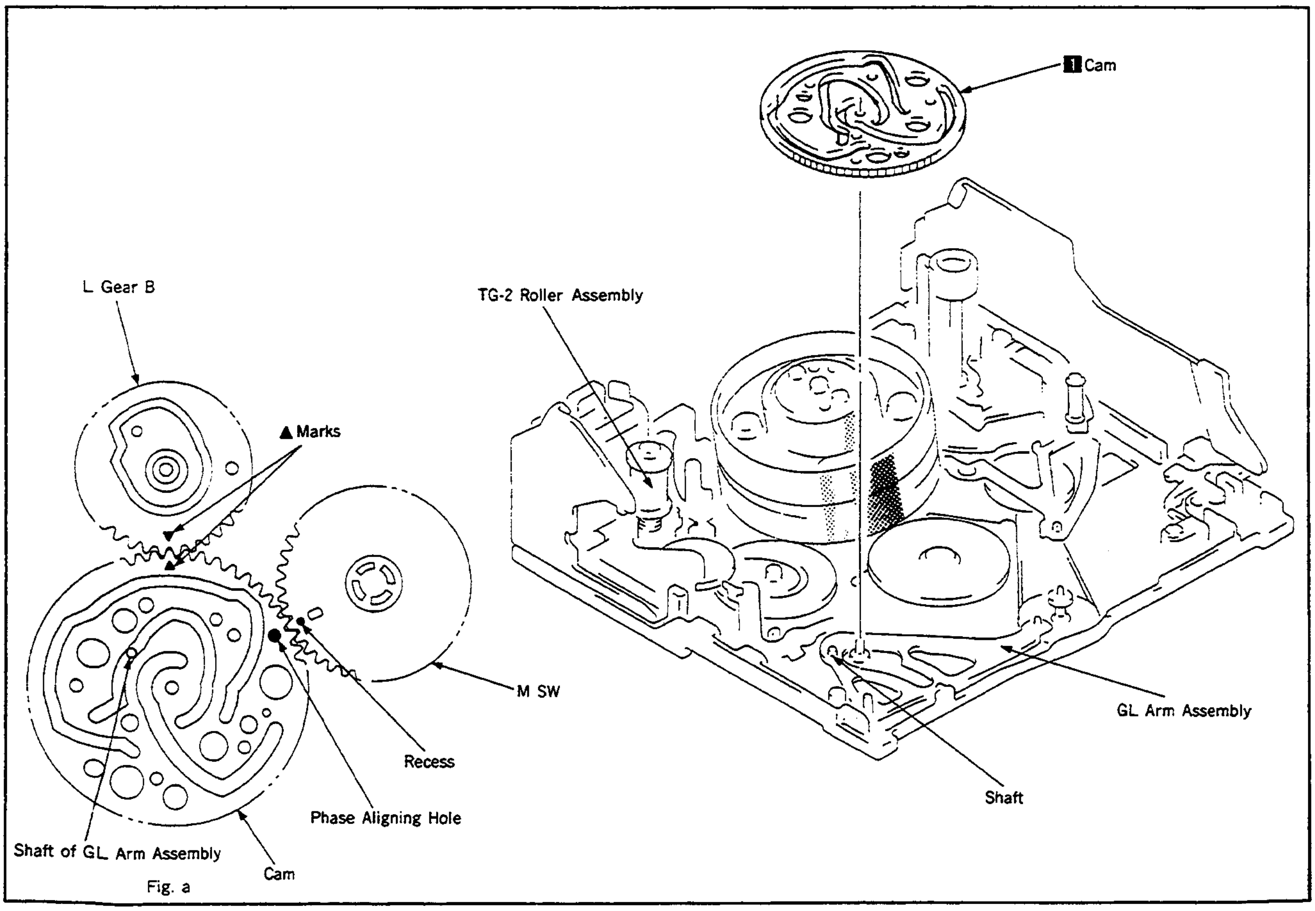


Fig. a

Fig. 25

3-18. GL ARM ASSEMBLY (Fig. 26)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Remove the GL arm assembly ❶.

2. Mounting

1) Mount the GL arm assembly ❶ with its hole ⓐ inserted in the shaft ⓑ of mechanical chassis.
2) Referring to 3-17, mount the cam.
3) Referring to 3-15, mount the M slider assembly.
4) Referring to 3-14, mount the LS arm assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

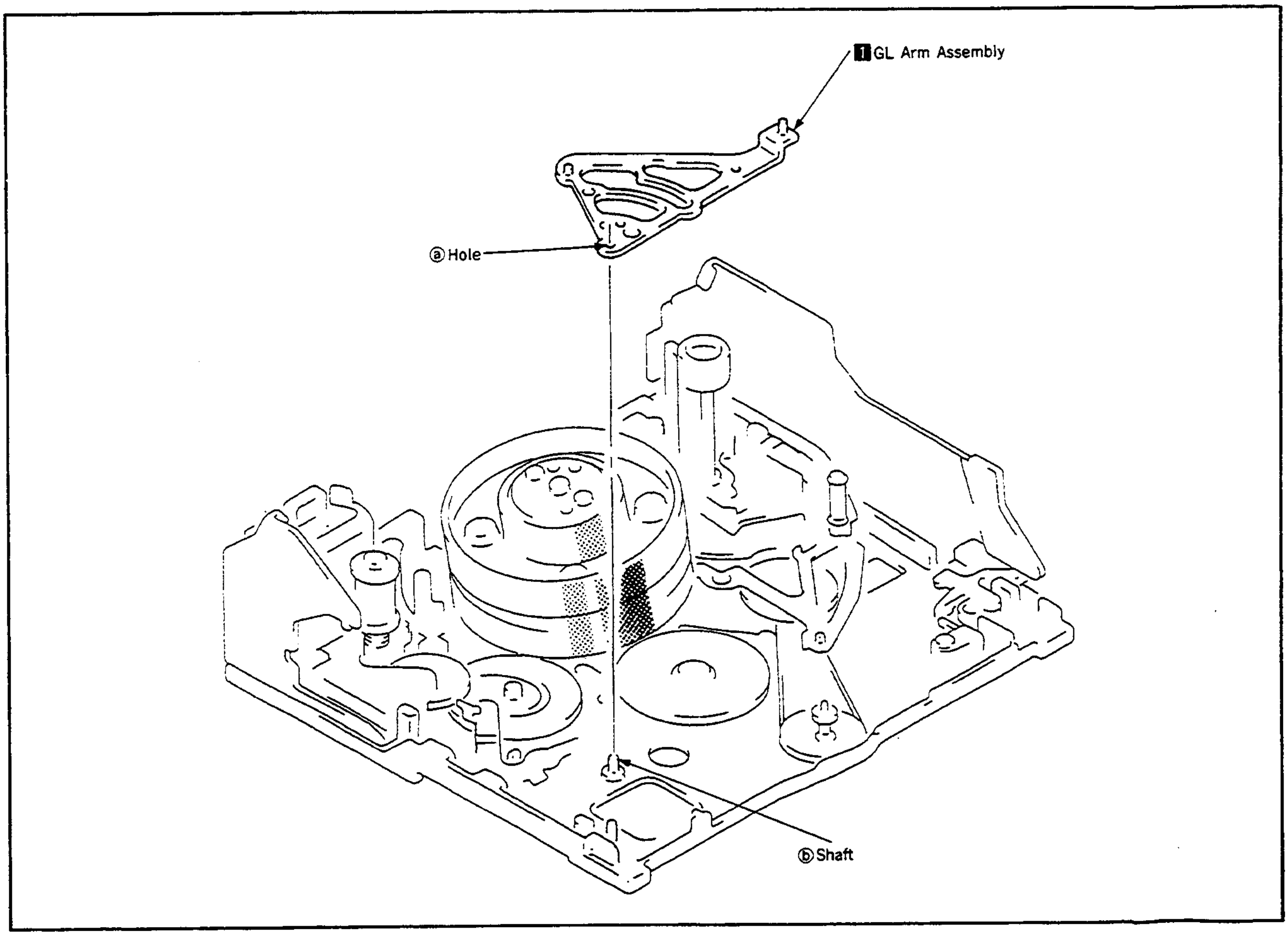


Fig. 26

9. L GEAR A AND L GEAR B (Fig. 27)

Removal

Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Referring to 3-13, remove the LM motor assembly.
9) Remove the FF arm assembly ❶.
10) Remove the L gear A ❷.
11) Remove the L gear B ❸.

2. Mounting

1) Insert the L gear B ❸ into the shaft of mechanical chassis. (At this time, the phase aligning mark ▲ should be faced toward the cam mounting shaft ⓐ.)
2) Insert the L gear A ❷ into the shaft of mechanical chassis.
3) Mount the FF arm assembly ❶ with its two shafts inserted into the cam groove of L gear B ❸ and the hole of mechanical chassis.
4) Referring to 3-17, mount the cam.
5) Referring to 3-13, mount the LM motor assembly.
6) Referring to 3-15, mount the M sleder assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-2, mount the protector base assembly.
10) Referring to 3-1, mount the Retainer, Gooseneck assembly.
11) Referring to 1-1, mount the cassette compartment assembly.

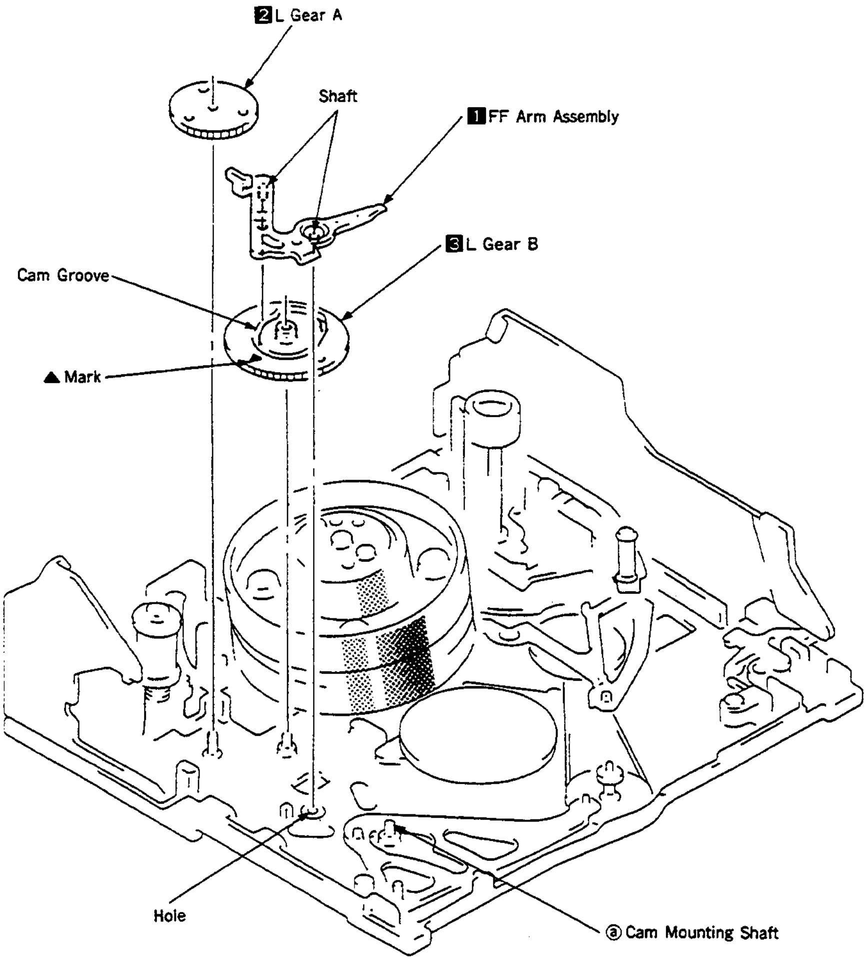


Fig. 27

3-20. RELAY PULLEY AND CHANGE GEAR ASSEMBLY (Fig. 28)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assembly.
6) Referring to 3-14, remove the LS arm assembly.
7) Referring to 3-15, remove the M slider assembly.
8) Referring to 3-17, remove the cam.
9) Referring to 3-18, remove the GL arm assembly.
10) Referring to 3-16, remove the pinch press arm assembly.
11) Remove a lock washer 1, then remove together the Change gear assembly 2, relay belt 3 and relay pulley 4.

2. Mounting

*Give one or two drips of oil to the conversion gear shaft and relay pulley shaft respectively. (Oiling range is under the neck as shown in Fig. a.)

1) Hooking the relay belt 3 to the relay pulley 4 and Change gear assembly 2, mount respective parts.

   *At first, insert the relay pulley into the mechanical chassis-shaft, then the change gear assembly by engaging with the capstan motor gear.

Note : Take care not to damage the Change gear by the capstan motor gear.

2) Mount a lock washer 1.
3) Referring to 3-16, mount the pinch press arm assembly.
4) Referring to 3-18, mount the GL arm asembly.
5) Referring to 3-17, mount the cam.
6) Referring to 3-15, mount the M slider assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-3, mount the drum assembly.
10) Referring to 3-2, mount the protector base assembly.
11) Referring to 3-1, mount the Retainer, Gooseneck assembly.
12) Referring to 1-1, mount the cassette compartment assembly.

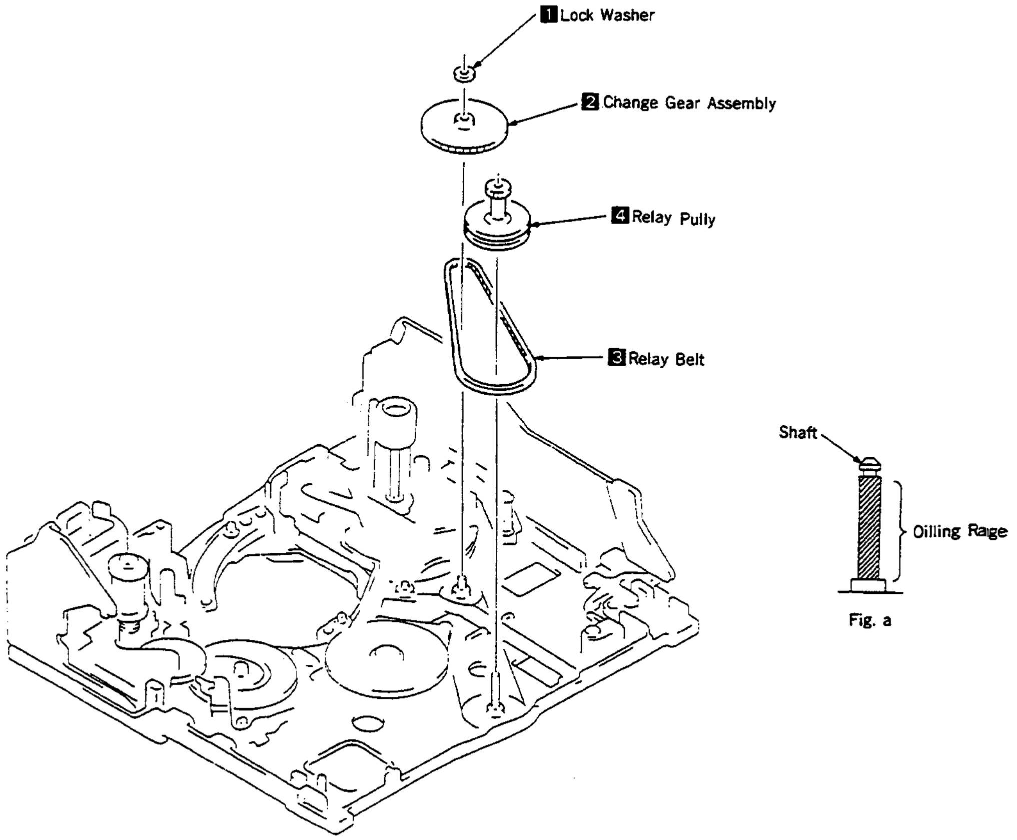


Fig. 28

3-21. ROTARY UPPER DRUM REPLACEMENT

1. Removoal

- If possible, make a recording before removal.

1) Remove the two screws 1 (Fig. 29).
2) Mount the jig 2 (Ref. No. J-10) with the two supplied screws 3, then screw the attached hexagon socket screws 4 to the jig 2. The rotary upper drum 5 will move upward and come off (Fig. 30).

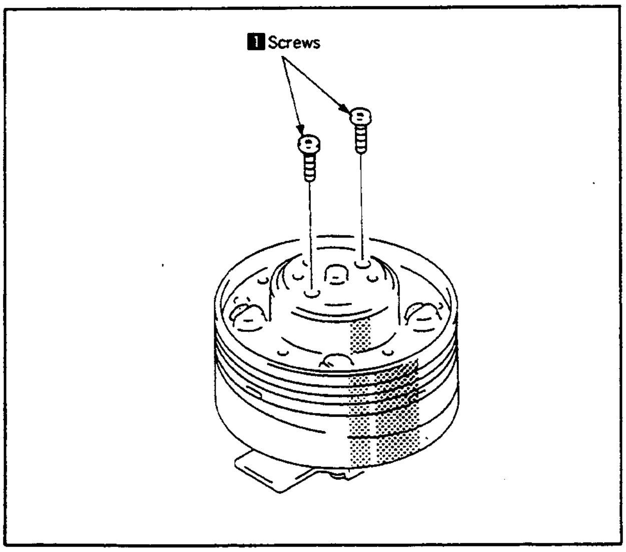


Fig. 29

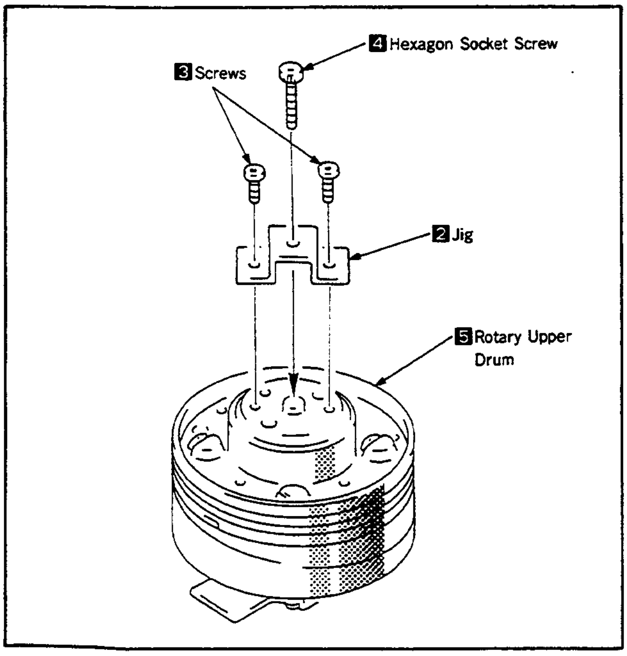


Fig. 30

2. Installation

1) Wipe clean the flange surface and the rotary upper drum 5 surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig 6 (Ref. No. J-10) into the drum positioining hole, then set then set the rotary upper drum 5 by passing the jig through its positioning hole 7. (Fig.31)
3) Remove the jig 6 and push down the rotary upper drum 5 gently by hand. If it does not go all the way down, secure it temporarily by tightening the two screws 1 alternately (Fig.29).
4) Insert the jig 6 into the positioning hole 7 again and confirm that it goes in smoothly. If it does not, loosen the two screws 1, repeat step 2) of the Removal paragraph and restart the setting procedure.
5) Tighten the screws 1.

Note : After installing, be sure to perform tape path adjustment as described in section 4.

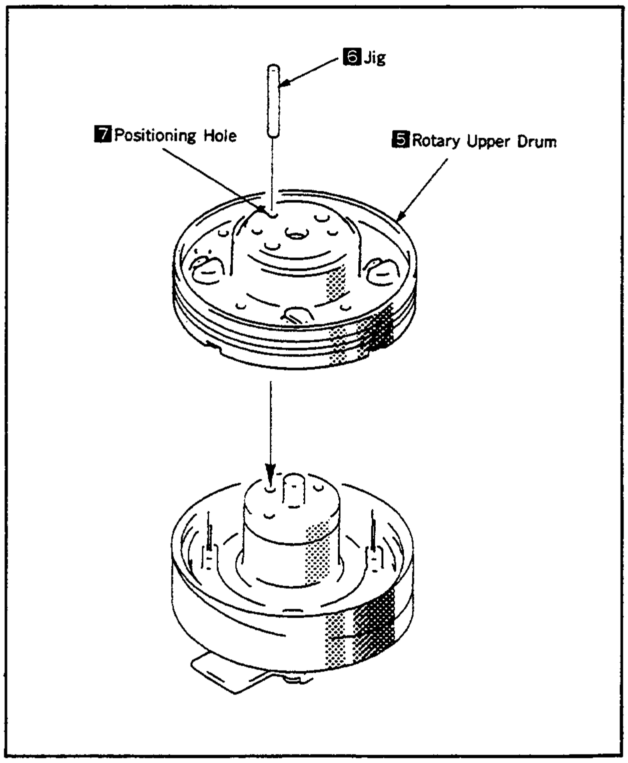


Fig. 31

3-22. ADJUSTMENT OF TENSION REGULATOR POSITION (Fig. 32)

1. Adjustment

1) Set a cassett tape and run the tape in the PB mode.
2) With the tape running, check that the distance from No.1 guide to No. 2 guide upper flange is 4.2 mm.
3) If they are not at the specified positions, perform adjustment in step 4) and subsequent steps.
4) Loosen the screw ❶.
5) If No.1 guide is located inside the specified position, shift the string block toward the arrow Ⓐ using the FWD B.T. adjusting driver (Ref No. J-15). Or, if it is located outside, shift toward the arrow Ⓑ.
6) Tighten the screw ❶.

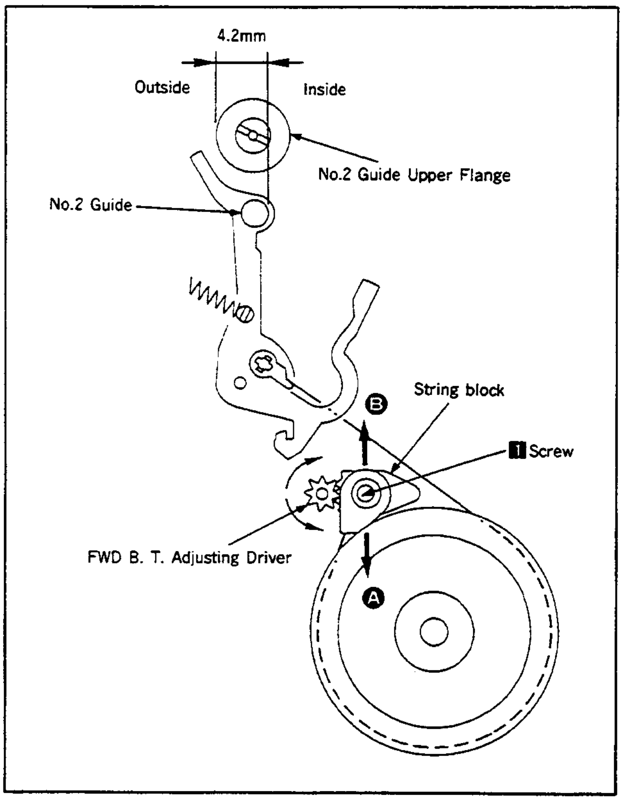

4.2mm
Outside
Inside
No.2 Guide Upper Flange
No.2 Guide
String block
Ⓑ
❶Screw
FWD B. T. Adjusting Driver
Ⓐ

Fig. 32

3-23. FWD BACK TENSION ADJUSTMENT (Fig.33)

1) Select the TEST mode 1 using the adjusting remote controller (Ref No. J-17).
2) Set the torque cassette (Ref No.J-10).
3) Select the FWD mode, and check that the torque of S reel table is 8.5 ~ 11.5 g · cm.
   If it is out of standard, adjust the TG-1 spring hook position using the FWD B.T. adjusting driver (Ref No. J-15).

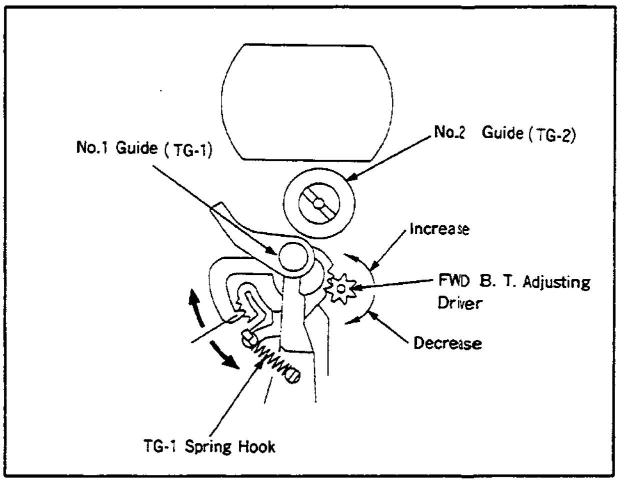

No.1 Guide (TG-1)
No.2 Guide (TG-2)
Increase
FWD B. T. Adjusting Driver
Decrease
TG-1 Spring Hook

Fig. 33

3-24. REEL TORQUE CHECK

1) Set the torque cassette.
2) Select the FWD mode, and check that the torque fluctuation center of T reel table is 7 ~ 17 g · cm
3) Select the REV mode, and check that the torque fluctuation center of S reel table is 25 ~ 39 g · cm.
4) Select the REV mode, and check that the torque of T reel table is 7 ~ 17 g · cm.
5) If the above data is not satisfied, the tension regulator band, T hard tab or T soft assembly will be faulty. Check them first, and if no abnormality is found, replace respective reel tables.

4. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.
This does away a tracking control knob and allows accurate track tracing.
On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF automatically corrects it, which means that perfect adjustment cannot be done.
Therefore, in the A mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode with the adjusting remote controller (Ref No.J-16). So, fine tracking adjustment can be easily done. Also, the PATH mode setting varies with the model, and therefore, refer to the Service Manual.

Example) For CCD-FX410 series
Set the adjusting remote controller to the HOLD ON side.

1) Set PAGE : 1, ADDRESS : 00, DATA : 01 to cancel the PROTECT mode.
2) Set PAGE : D, ADDRESS : 01, DATA : 03 to select the PATH mode.

Note : Setting of PATH mode = TRACK SHIFT mode
If the adjusting remote controller (Ref No.J-16) is set to HOLD OFF once, then set to HOLD ON again after mode setting, the display of ADDRESS and DATA changes.

3) After adjustment is over, set DATA : 00, and press the PAUSE buttom on the adjusting remote controller (Ref No. J-16).

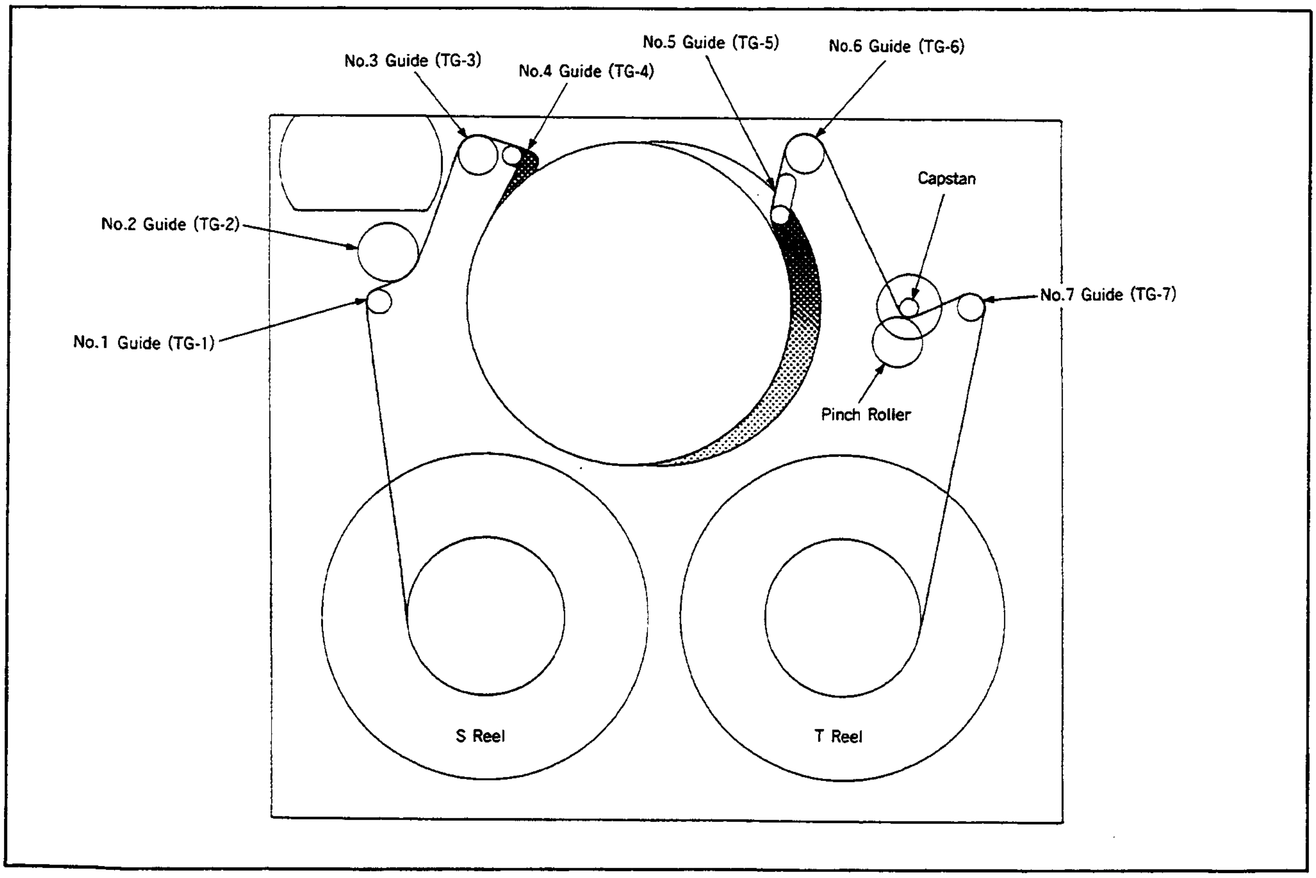


Fig. 34-A

[Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig.41).
Therefore, when performing section 4-4. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-6), modified as follows, and perform adjustment in playback mode.

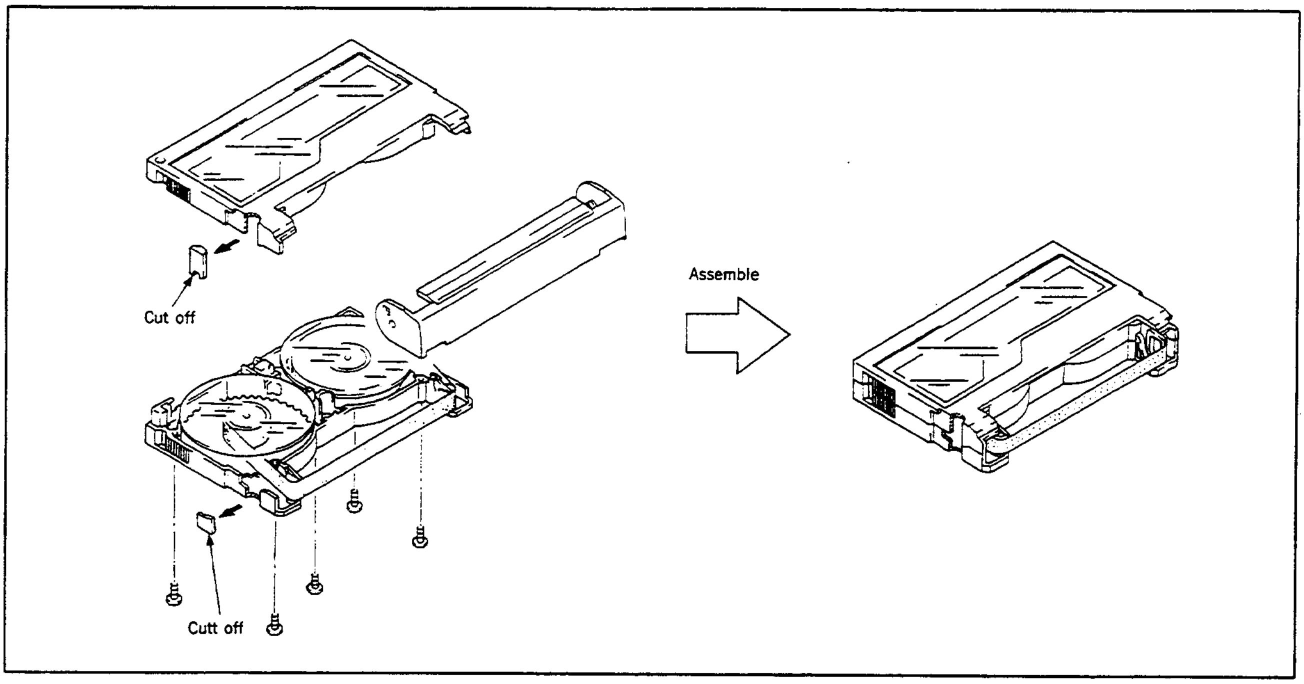


Fig. 34-B

4-1. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surface (tape guides, drum, capstan shaft, pinch roller) (Fig. 34-A).
2) Set the PATH mode using the adjusting remote controller.
3) connect an oscilloscope to the check pin connector of the set.
   Example) For CCD-FX410 series
      CH1 : CN001 pin ③ (PB RF OUT) on CS-31 board
      CH2 : CN001 pin ④ (RF SWP) on CS-31 board
4) Play back a tracking alignment tape (NTSC : WR5-1N, or PAL : WR5-1C).
5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope (Fig. 35 ⓐ).
   If not flat, make adjustment with the procedures below.
   When the RF waveform is not flat at the inlet/outlet ; See Fig. 35 ⓑ and ⓒ.

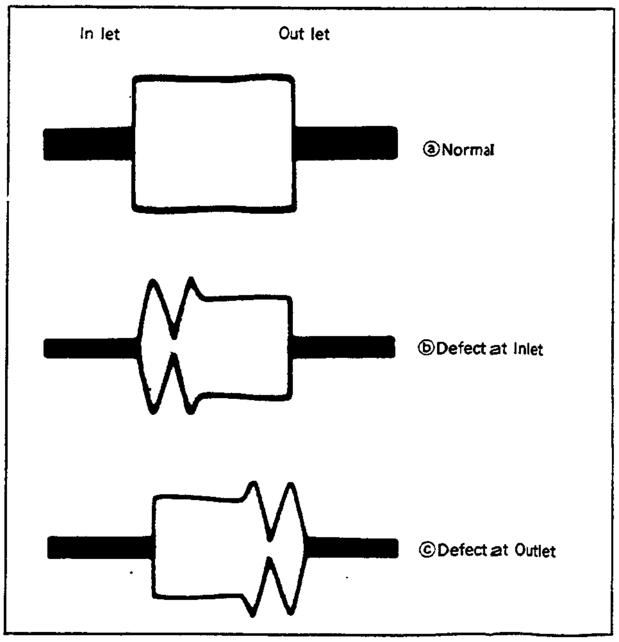


Fig. 35

4-2. TRACKING ADJUSTMENT (Fig. 36, 37)

1) Play back the tracking alignment tape.
2) Loosen the No.3 guide (TG-3) lock screw ❶ and turn the No.3 guide to flatten the waveform at the inlet.
3) Tighten the No.3 guide (TG-3) lock screw ❶ to lock the No.3 guide.
4) Loosen the No.6 guide (TG-6) lock screw ❷ and turn the No.6 guide to flatten the waveform at the outlet.
5) Tighten the No.6 guide (TG-6) lock screw ❷ to lock the No.6 guide. When this is done, make sure that the waveform does not change at the outlet.

Note : Be careful not to loosen the lock screw too much because the guide is easily moved.
: Take care not to allow interference between No.6 guide and drum when tightening the No.6 guide lock screw.

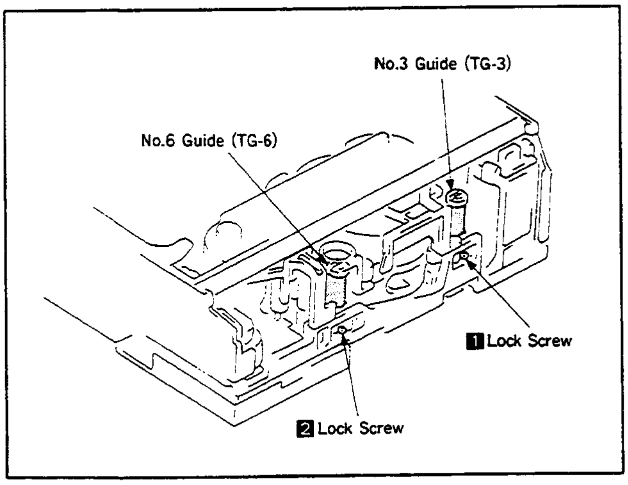


Fig. 36

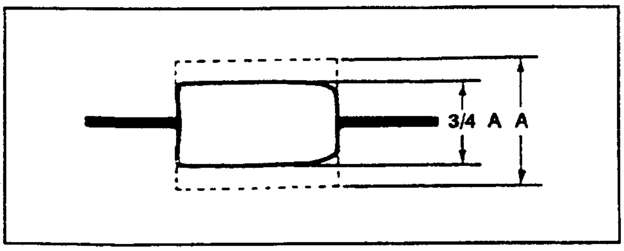


Fig. 37

4-3. No.2 GUIDE (TG-2) ADJUSTMENT

When the No.2 guide has been turned or replaced, perform height presetting before this adjustment.

4-3-1. No. 2 GUIDE (TG-2) HEIGHT PRESETTING (Fig. 38)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3.3 ± 0.05 mm.

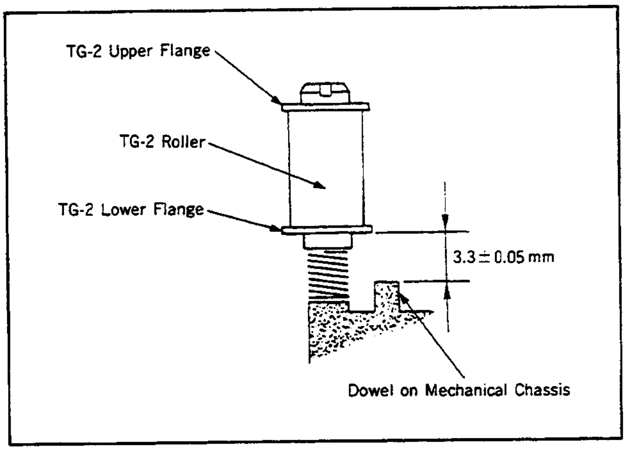


Fig. 38

[Reference]
This A mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7). To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

Guide	Guide adjustment	Rotating direction of adjustment screw
TG-2, 3, 6	Raise	Counterclockwise
	Lower	Clockwise
TG-7	Raise	Clockwise
	Lower	Counterclockwise

4-3-2. No. 2 GUIDE (TG-2) ADJUSTMENT (Fig. 39, 40)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange ❷ of the No.2 guide (TG-2) ❶ (Fig. 39). If it is, turn the upper flange ❸ of the No.2 guide (TG-2) clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and trcking fine adjustment as described in sections 4-2.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (Fig. 40), turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ 90° counterclockwise and repeat step 5.
   Repeat steps 5) and 6) until a normal waveform is obtained.
   Then, confirm that the tracking waveform has not changed.
   If it has, perform fine adjustment of entrance side tracking and repeat step 5).

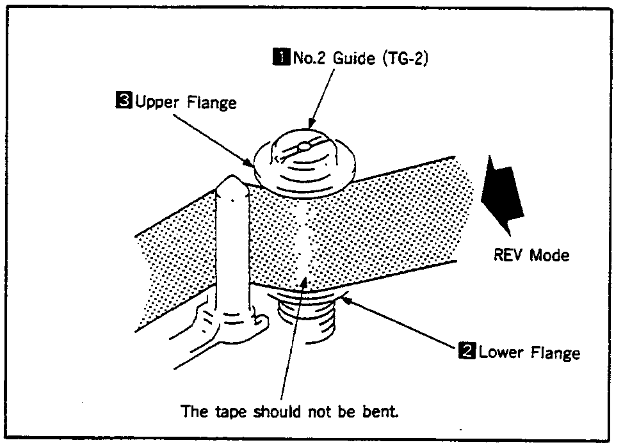


Fig. 39

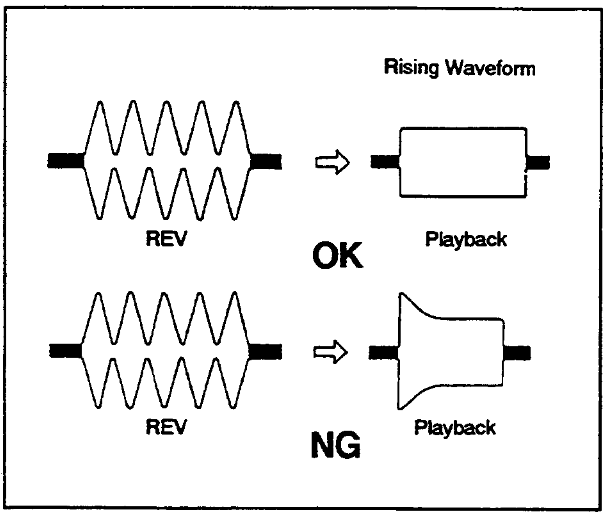


Fig. 40

4-4. No.7 GUIDE (TG-7) ADJUSTMENT (Fig. 41)

Note : This adjustment requires the No. 7 guide adjusting cassetetape (Fig. 34-B).

1) Play back the No.7 guide adjusting cassetetape and set the REV mode.
2) Confirm that the tape is not bent between the No.6 guide (TG-6) ❶ and the capstan ❷. If it is, turn the hight adjusting screw ❹ of the No.7 guide (TG-7) ❸ until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan ❷ and the hight adjusting screw ❹ of the No.7 guide (specification : 0.5mm or less). If the tape is bent beyond the specification, turn the No.7 guide (TG-7) ❸ until bending is within the specification (0.5mm).
   If in the REV mode tape bending between the No. 6 guide (TG-6) ❶ and the capstan ❷ is 0.3mm or less, adjustment can be considered completed.

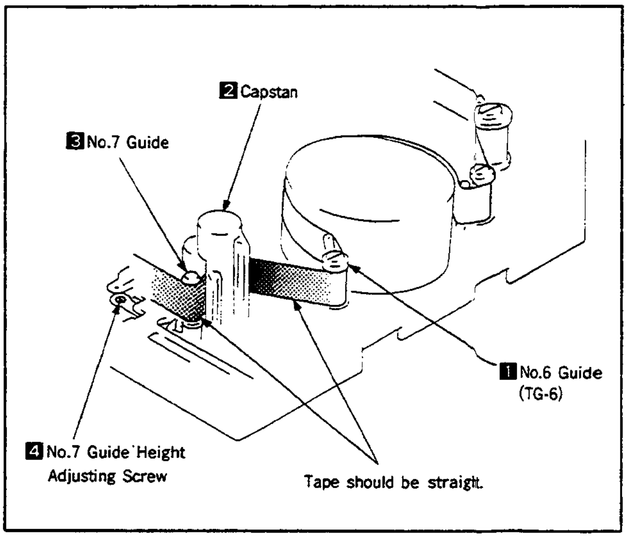


Fig. 41

4-5. CUE AND REV WAVEFORM CHECK (Fig. 42)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (Fig. 42). In case pitch is not constant, perform section 4-2.Tracking Fine Adjustment and section 4-4. No.7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (Fig.42).
   Otherwise, perform section 4-2 Tracking Fine Adjustment.

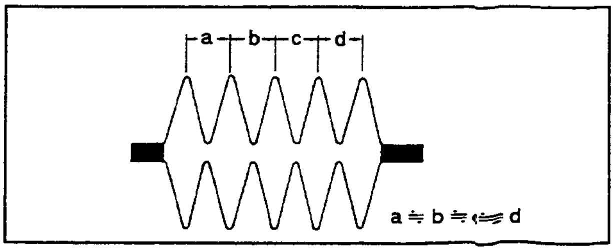


Fig. 42

4-6. CHECK AFTER ADJUSTMENT

4-6-1. TRACKING CHECK

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (Fig. 43).
2) Then, confirm that the minimum amplitude value (EMIN) is 65 % of the maximum value (EMAX) or larger (Fig. 44).
3) Confirm that no large fluctuations occur on the waveform (Fig. 45).

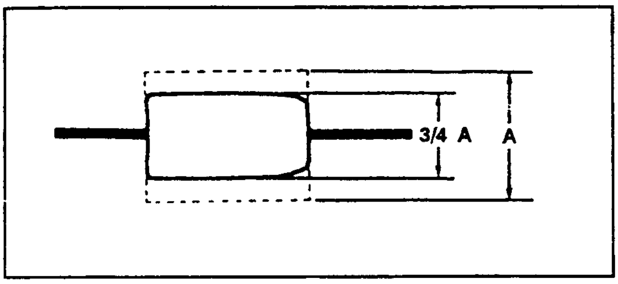


Fig. 43

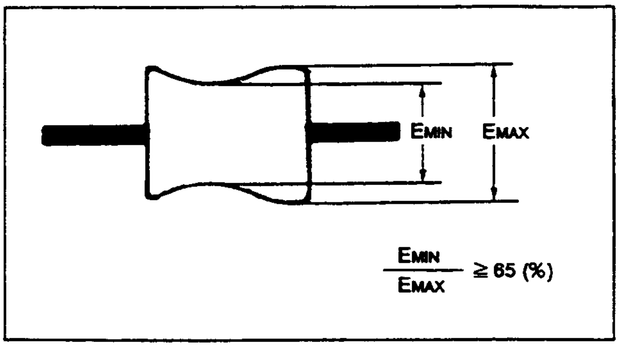

EMIN
EMAX
$\frac{E_{MIN}}{E_{MAX}} \geq 65$ (%)

Fig. 44

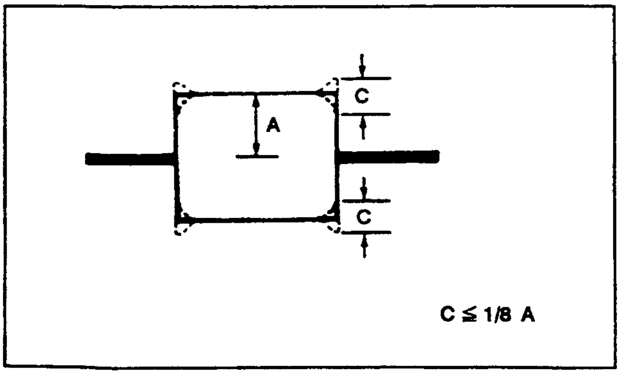


Fig. 45

4-6-2. RISING CHECK (Fig. 46)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF wave form rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds, Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

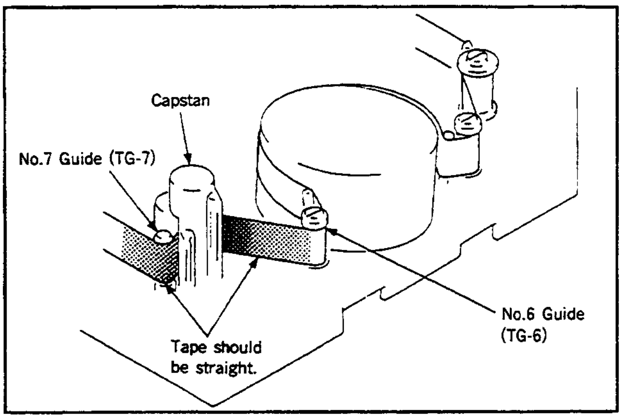

Capstan
No.7 Guide (TG-7)
No.6 Guide (TG-6)
Tape should be straight.

Fig. 46

4-6-3. TAPE PATH CHECK (Fig. 47)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3mm, at the lower flange of the No. 2 guide , the upper flange of the No.3 guide, the upper flange of the No. 6 guide and the No.7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3mm at the flange of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

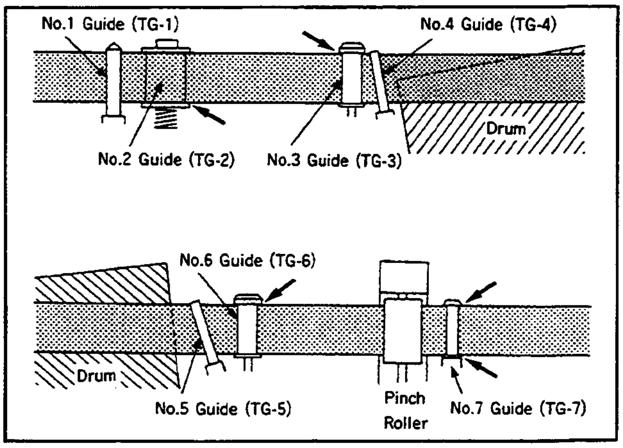

No.1 Guide (TG-1)
No.4 Guide (TG-4)
Drum
No.2 Guide (TG-2)
No.3 Guide (TG-3)
No.6 Guide (TG-6)
Drum
No.5 Guide (TG-5)
Pinch Roller
No.7 Guide (TG-7)

Fig. 47

8mm Video MECHANICAL ADJUSTMENT MANUAL IV

A MECHANISM

SUPPLIMENT-2

Video 8

〈Connection of Mode Selector IV Conversion Connector〉

In use of Mode selector IV conversion connector(J-6082-167-A), there are two different connecting methods depending on the model connected:

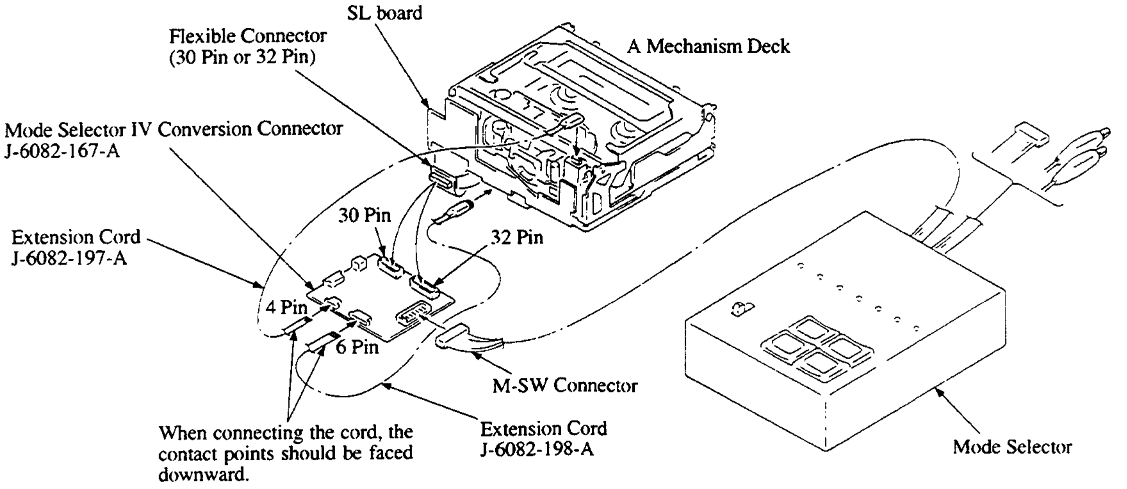
1. CCD-FX series

With the SL board mounted on mechanical deck, connect 30-pin(or 32-pin) connector to 30-pin(or 32-pin) Mode selector IV conversion connector.

(CCD-FX300 series, FX400 series. FX500 series
→ 30-pin connector (FP425 or FP600)
CCD-FX700 series → 32-pin connector (FP477))

2. Models other than above

Connect the extension cord(J-6082-197-A) to loading motor 4-pin connector and extension cord (J-6082-198-A) to mode switch 6-pin connector in mechanical deck, then connect the other end of cord to 4-pin and 6-pin connectors of Mode selector IV conversion connector respectively, as shown below.


SL board
Flexible Connector
(30 Pin or 32 Pin)
A Mechanism Deck
Mode Selector IV Conversion Connector
J-6082-167-A
30 Pin
Extension Cord
J-6082-197-A
32 Pin
4 Pin
6 Pin
M-SW Connector
Extension Cord
J-6082-198-A
Mode Selector

When connecting the cord, the contact points should be faced downward.

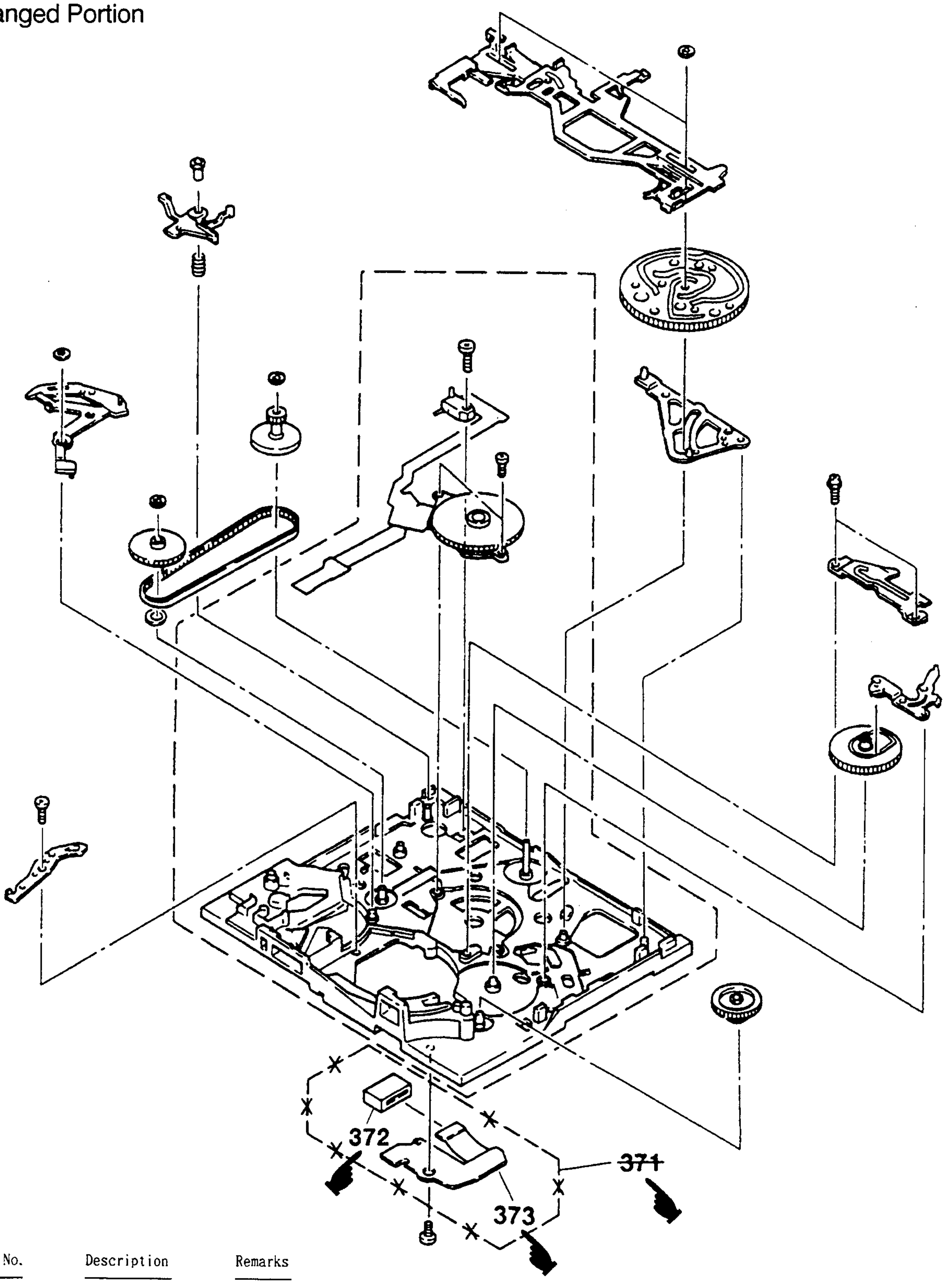
〈CORRECTION〉

P10. 2-4 Service jigs list

		Incorrect		Correct
J-15	FWD B.T adjusting driver	J-6082-182-A	➜	J-6082-187-A

MECHANISM CHASSIS ASSEMBLY (2)

☛ : Changed Portion



Ref.No.	Part No.	Description	Remarks
~~371~~	~~A-7040-311-A~~	~~FP-444 ASSY~~	☛
372	1-691-254-13	CONNECTOR, TRANSLATION 10P	☛
373	1-641-639-13	FP-442 FLEXIBLE BOARD	☛

9-973-199-84

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